Instructor: Dr. Hwan C. Lin
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Course Description:

The course surveys theories of economic growth and development applied to varying economic and social systems, with an emphasis on current theoretical models of technological change and growth. Course prerequisite: ECON 2102.

Our discussion of growth theory is selective, focusing mainly on the analytical models. Our text The Economics of Growth is written for undergraduate and first-year graduate students. There are other excellent books on growth theory. An excellent background book is C.I. Jones An Introduction to Economic Growth, 2nd ed., 2001. This is written as an undergraduate text, but is a useful discussion of some of the basic issues and approaches. Another book is R.J. Barro & X.Sala-i-Martin, Economic Growth, 2nd ed., 2003. This is particularly written for graduate students.

Our text is a useful guide to growth theory. Our lecture will basically follow the text along with some selected seminal papers in the growth literature. These models will include the neoclassical growth model, AK models and endogenous growth models, which are either innovation-based or human capital-based.

We will focus on the computational approach to understanding growth models. That is, students will primarily need to solve static or dynamic systems numerically. Students are
required to learn some programming languages. We chose Python 2.7.3 to be the programming language for this course. Python is a general-purpose object-oriented programming language. It is free and very easy for the beginners to learn. But, if you are familiar with Matlab, and if you prefer to use it for our course. It is absolutely okay. Regardless, you are encouraged to learn Python. For our classroom discussions, only the Python language will be demonstrated.

From the course, it is expected that students will gain skills to apply the computational approach to economic growth and some government policies.

Python 2.7.3:

Note that for Python to perform efficient scientific computation and plotting, you will need to make sure that your Python package includes Python 2.7.3, Numpy, Scipy and Matplotlib. You can download each one of these components in your computer. Or you can take a short cut to installing a more comprehensive package through:


After you have installed the Python package with success, you will also need to install another package – scikits.bvp_solver -- for solving two-point boundary value problems for ordinary differential equations:

scikits.bvp_solver: [http://packages.python.org/scikits.bvp_solver/](http://packages.python.org/scikits.bvp_solver/)

There are many useful online resources available for learning Python. For instance,

The Python Tutorial: [http://docs.python.org/2/tutorial/](http://docs.python.org/2/tutorial/)
Google’s Python class: [https://developers.google.com/edu/python/](https://developers.google.com/edu/python/)

Reading Assignments:

*** Background and Overview ***

Introduction (the text)


*** The Neoclassical Growth Model ***

Ch. 1


*** AK Models ***

Ch. 2


*** R&D-based Endogenous Growth Models: Variety expanding ***

Ch. 3


*** R&D-based Endogenous Growth Models: Quality Ladders ***

Ch. 4


*** Capital, Innovation, and Growth Accounting ***

Ch. 5
**Attendance:** Students are expected to attend every class on time. If you miss classes, you will easily get lost in class.

**Grading Policy:**

1) The course grade is based on two exams, one project, and homework assignments.

2) The two exams are equally weighted. Each one counts for 100 points.

3) The project counts for 100 points. It involves numerical analysis using Python. An overdue project will not be acceptable.

4) The homework assignments count for 100 points in total. Every homework must be handed to the instructor as soon as the class begins on the due date. You will earn zero point from any overdue homework.

5) The maximum points you can earn from the course are 400 (=100+100+100+100).

6) Course Grade: your course average is a percent of the 400 points and your grade is assigned based the following scale:

   - A = 87% or above
   - B = 77% - 86%
   - C = 67% - 76%
   - D = 57% - 66%
   - F = 56% or below

For graduate students, the grade scale is the same except that below 67% is a grade of U.

7) No make-up exam shall be given, unless you can provide strong justifiable reasons. To justify a make-up exam, you will be asked to provide official documents. Yet, the decision is subject to the instructor’s approval. You earn zero point from any exam you missed.

**Important Dates:**

- First Day of Classes – Wednesday, January 9, 2013
- Last day of classes – Wednesday, April 24, 2013
- Exam One – Wednesday, February 20
- Exam Two – Wednesday, April 24
- Project due: TBA
**Academic Integrity:**

Students have the responsibility to know and observe the requirements of The UNC Charlotte Code of Student Academic Integrity (Catalog, page 275). This code forbids cheating, fabrication or falsification of information, multiple submissions of academic work, plagiarism, abuse of academic materials, and complicity in academic dishonesty. Any special requirements or permission regarding academic integrity in this course will be stated by the instructor and are binding on the students. Academic evaluations in this course include a judgment that the student’s work is free from academic dishonesty of any type; and grades in this course therefore should be and will be adversely affected by academic dishonesty. Students who violate the code can be expelled from UNC Charlotte. The normal penalty for a first offense is zero credit on the work involving dishonesty and further substantial reduction of the course grade. In almost all cases, the course grade is reduced to F. Copies of the code can be obtained from the Dean of Students Office. Standards of academic integrity will be enforced in this course. Students are expected to report cases of academic dishonesty to the course instructor.