ADVANCED MACROECONOMICS

offered in Spring Semester 2018 at Keio University
lectured by Hiroyuki Ozaki

Course Description

as of April 9, 2018

Administrative Details Monday, 2nd Period (10:45-12:15), Room 334 in Graduate School Building. Office Hours: Monday, lunch break at the same classroom right after the lecture, or please make an appointment. The materials for this lecture will be constantly uploaded in my web page. (http://web.econ.keio.ac.jp/staff/ozaki/lectures.html) Please check here frequently.

Course Outline This course provides the techniques necessary for solving dynamic optimization problems that appear everywhere in modern macroeconomics. I assume you be able to differentiate functions, which of course assumes that you know what the "function" is. Other mathematics is covered during the class in a self-contained manner. The class extensively considers models where time is discrete and planing horizon is infinite. If time permits, though, I may present introduction to the continuous-time model with an infinite horizon.

More Detailed Description of This Course

April 9 Introduction. What kind of mathematical problems do we consider? What is its economic contents?

April 16 Basics of Dynamic Programming. The Value Function. Bellman's Equation. The value function is a solution to Bellman's equation. The value function is the unique solution to Bellman's equation (Bellman's principle of optimality).

April 23 (Keio Foundation Day, but there is a class as usual Aside: The Kuhn-Tucker Theory for optimization problems. The First-order Necessary Condition. The Second-order Sufficient Condition.

May 7 Characterizing the optimal consumption and capital accumulation paths. The Euler Equation. The Transversality Condition.

May 14 Concrete Examples of the Optimal Growth Model. A Sufficient Condition for Bellman's Principle of Optimality (Upper-convergence). The Turnpike Theorem.

May 21 Introduction to Continuous-time Optimal Growth Model à la Ramsey-Koopmans-Cass.

May 28 In-class Midterm Examination.

Textbook None. Nonetheless, Stokey and Lucas (1989) is helpful, which is an old book but is still very useful.

Evaluation The *Midterm Examination* planed to be conducted on May 28 counts 100%. I distribute Problem Sets and Answer Keys to them every week and the exam very much looks like them.