

# Economics 414: Growth Theory

## Course topics arranged by unit

This advanced undergraduate course is about the modern approach to analyzing long-run macroeconomic phenomena. Analysis is aimed at developing an understanding of quantitative relationships between macroeconomic variables (e.g. output, capital, consumption, investment) and their evolution through time. This understanding will help interpret historical macroeconomic data and get insights into mechanics and sources of economic growth, the reasons behind income disparities across countries, the role of intellectual property in the process of growth and the influence of government actions on economic prosperity. The class is organized into six units, listed below with the topics covered in each.

### Unit 1. Macroeconomic measurement

- Introduction to the course and to long-run macroeconomics (Lecture 1)
- Macroeconomic variables: output, capital, consumption, investment (Lecture 2; Mankiw 2.1)
- Logarithms, growth rates, and compounding (Section 1; Jones & Vollrath A.3)
- Measuring change with growth rates (Lecture 3; Section 2)
- Real GDP and inflation (Lecture 4; Mankiw 2.2)

### Unit 2. Production and investment

- Capital accumulation equation and wealth accumulation (Lecture 5; Section 3)
- Production function, profit maximization, and input demands (Lecture 6; Mankiw Ch. 3; Jones & Vollrath 2.1)
- The investment decision, Jorgenson's formula, and investment demand (Lecture 7; Section 4)

### Unit 3. Financial markets and the macroeconomy

- Rate of return on capital and the capital rental market (Lecture 8)
- Asset pricing (Lecture 9; Section 4)
- Value of the firm (Lecture 10)

### Unit 4. Understanding the mechanics of growth

- The basic Solow model: steady state, transition dynamics, and applications (Lectures 10–11; Section 6; Jones & Vollrath 2.1.1–2.1.5 and 2.2)
- Long-run consumption in the Solow model (the golden rule) (Lecture 12)
- The Solow model with technological change (Lectures 12–13; Sections 7–8; Jones & Vollrath 2.2)

### Unit 5. Understanding cross-country income inequality

- PPP exchange rates and the measurement of cross-country income inequality (Lecture 14; Section 9; Jones & Vollrath 1.1–1.2)
- Relative income decomposition (Lecture 15; Section 10)
- Explaining cross-country income differences (Lecture 16)

- Explaining cross-country TFP differences and misallocation (Lecture 17; Section 11)

## **Unit 6. Incentives to innovate as a cause of growth**

- Long-run growth facts and the endogenous growth model (Lecture 18; Jones & Vollrath 5.1–5.2)
- The market for ideas and the mechanism of economic growth (Lecture 19; Section 12; Jones & Vollrath 5.5)
- Endogenous growth from the firm's perspective and the balanced growth path (Lecture 20)
- Policy analysis: externalities, idea TFP, and the social value of an idea (Lecture 21; Section 13)
- Are new ideas getting harder to find? (Lecture 22)
- What have we learned about economic growth? (Lecture 23)

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*Sources in parentheses refer to lecture and discussion-section numbers in the Fall 2024 course calendar and to readings in Mankiw, Macroeconomics, and Jones & Vollrath, Introduction to Economic Growth.*