



University of California, Santa Barbara Program Learning Outcomes

B.A. in Economics and Mathematics

Students graduating with a B.A. in Economics and Mathematics should be able to:

Microeconomics

1. Be able to conceptualize consumers and firms as attempting to maximize some objective function subject to a feasibility constraint, and be able to understand the equalization of marginal benefits and marginal costs as optimality conditions.
 - a. Describe preferences and production technologies using mathematics.
 - b. Apply optimization models to consumer, producer, and market theories.
 - c. Use game theory to analyze different market structures, the strategic behavior of individuals and firms, and problems associated with asymmetric information.
2. Using the concept of equilibrium, predict how changes in fundamental factors affect economic outcomes.
 - a. Find a competitive equilibrium given a mathematical representation of demand and supply.
 - b. Show how a change in factors determining demand and supply affect the competitive equilibrium.
 - c. Find the profit maximizing solution for a monopolist given a mathematical representation of demand and marginal cost.
3. Use the aforementioned microeconomic tools and concepts to explain market outcomes and policy choices as they apply to a wide range of markets and environments. Examples include the effect of minimum wages on employment, the incidence of excise taxes, the use of marketable pollution permits to control pollution, and the effect of Social Security on private saving.

Macroeconomics

4. Recognize that in the short-run the macro economy is characterized by business cycle fluctuations.
 - a. Explain the National Income and Product Accounts using product, expenditure, and income approaches.
 - b. Quantify unemployment and explain its important role in business cycle fluctuations.
 - c. Explain the roles of fiscal and monetary policy for dealing with short-run fluctuations.
5. Recognize that in the long-run economic growth depends on savings and investment decisions, comparative advantage and the gains from trade, human capital accumulation, and technological change.

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**University of California, Santa Barbara
Program Learning Outcomes, continued**

- a. Analyze savings and investment choices using intertemporal choice models.
- b. Measure present value and future values of assets and income and cost streams.
- c. Use macroeconomic growth models to explain the roles of savings and investment decisions, comparative advantage and the gains from trade, human capital accumulation, and technological change for long-run economic growth.

Econometrics

- 6. Use simple econometric techniques to analyze economic data and communicate the results.
 - a. Quantify uncertainty using probability theory.
 - b. Measure economic quantities.
 - c. Use linear econometric models to analyze economic data.

Mathematics

- 7. Solve mathematical problems using techniques and concepts from calculus, linear algebra and differential equations.
- 8. Use mathematical tools to solve problems arising in Economics and/or practical situations.
- 9. Demonstrate proficiency in mathematical communication, including the comprehension and writing of mathematical proofs; including writing well-organized, grammatically correct, and logically sound mathematical arguments.
- 10. Evaluate and interpret numerical, graphical and symbolic representations of data and effectively communicate mathematical ideas using these means.