

COLLEGE OF ECONOMICS AND FINANCE

**DIVISION OF
ECONOMICS & FINANCE**



HANYANG UNIVERSITY

Classification : Basic Major

Introduction to Economic Statistics

Course Code: ECO1005		
Credits	Class Hr	Lab Hr
3	3	0

This course covers contents that are essential to understanding econometrics. Major topics that will be presented are general introduction to the theory and practice of descriptive statistics, probability and probability distribution, random sampling, and statistical inference. Students will be exposed to basic concepts and procedures of data presentation, probability theory, and hypothesis testing. Key concepts include types of variables, data presentation using tables and graphs, numerical descriptive measures such as mean and standard deviation, probability, Bayes theorem, random variables, discrete and continuous probability distributions, random sample and sampling distribution, normal distribution, t-distribution, level of significance and confidence level, confidence interval, null and alternative hypotheses, test statistic, rejection region, type I and type II errors, p-value, one-tailed and two-tailed tests, and inference on population proportion. The topics on two-sample tests may also be discussed.

Frequency of Course Offering: Every Fall

Prerequisite: None

Classification : Basic Major

Introductory Mathematics for Economists

Course Code: ECO1007		
Credits	Class Hr	Lab Hr
3	3	0

Mathematics is the language of modern economics. In this course, basic mathematical problems commonly encountered in the study of economics, and mathematical concepts and operations such as set, function, matrix, differentiation and integration, vector, exponential and logarithmic functions will be covered. The three main topics dealt in this class are linear algebra, multivariable calculus, and optimization. Students are expected to be able to solve solutions of linear systems, take partial derivatives of explicit and implicit functions, and solve unconstrained and constrained optimization problems. Students will be exposed to a rigorous treatment of mathematical concepts and methods, but the class will also spend time on building the intuitive link between mathematics and economics and applying mathematics to understand important problems in economics.

Frequency of Course Offering: Every Spring

Prerequisite: None

Classification : Basic Major

Microeconomics 1: Consumer & Firm Behavior

Course Code: ECO2029		
Credits	Class Hr	Lab Hr
3	3	0

This is the first course of a one-year microeconomics sequence, in which students will be exposed to a rigorous but largely intuitive development of the foundational concepts in microeconomics. Main topics covered in this first course of the sequence include consumer theory, producer theory, and a perfectly competitive market (i.e., how rational consumers and producers would behave and what would happen in a perfectly competitive market where their demand and supply decisions are aggregated). While this one-year microeconomics sequence heavily relies on the use of intuitive and graphical analysis, it also prepares students for more advanced courses in upper years by presenting mathematical tools that are required in advanced economics courses offered in upper years. Students are expected to have a basic understanding of calculus.

Frequency of Course Offering: Every Spring

Prerequisite: Introductory Mathematics for Economists

Classification : Core Major

Macroeconomics 2: Business Cycles & Economic

Course Code: ECO2032		
Credits	Class Hr	Lab Hr
3	3	0

'Macroeconomics 2: Business Cycles & Economic' introduces students an intermediate level of macroeconomic analysis. In comparison to the introductory macroeconomic courses, the course is intended to cover more advanced topics in various areas of macroeconomic theories and applications. The emphasis of the course is on the study of the structure and performance of national economies and the policies that governments use to try to affect economic performance. In addition, developing skills essential to empirical analysis of macroeconomic models and policies will be an important part of the course. The specific topics of the course include: Classical vs. Keynesian macroeconomics, asset pricing and monetary policies, and long-run economic growth including the Solow and endogenous growth models and modern empirical macroeconomics.

Frequency of Course Offering: Every Fall

Prerequisite: None

Classification : Core Major

Microeconomics 2: Market Structure & Welfare

Course Code: ECO2033		
Credits	Class Hr	Lab Hr
3	3	0

This is the second course of a one-year microeconomics sequence, in which students will be exposed to a rigorous but largely intuitive development of the foundational concepts in microeconomics. Main topics covered in this second course of the sequence include fundamental theorems of welfare economics and several examples of market failures. In particular, this course examines under what conditions a perfectly competitive market leads to an efficient market outcome, and how the violation of these conditions results in an inefficient market outcome. Specific examples of the market failures covered in this course include monopoly, oligopoly, externality, public goods, and information asymmetry. While this one-year microeconomics sequence heavily relies on the use of intuitive and graphical analysis, it also prepares students for more advanced courses in upper years by presenting mathematical tools that are required in more advanced economics courses offered in upper years. Students are expected to have a basic understanding of calculus.

Frequency of Course Offering: Every Fall

Prerequisite: Introductory Mathematics for Economists, Microeconomics 1: Consumer & Firm Behavior

Classification : Basic Major

Finance Economics

Course Code: ECO2059		
Credits	Class Hr	Lab Hr
3	3	0

This course offers the framework to understand the concepts of the time value of cash flows, basic principles and intermediate level techniques in corporate finance, financial products and markets, and basic investment analysis. Main topics include: time value of money (present value, future value, discount rate and annuity), capital budgeting (net present value, internal rate of return and profitability index), Portfolio Theory (risk and return, diversification and portfolio risk and efficient frontier), Capital Asset Pricing Model (beta and systematic risk, capital market line and risk premium), and capital structure (cost of capital, Modigliani-Miller hypothesis, degrees of operating and financial leverage). Students in this course will be exposed to key financial issues faced by modern-day finance managers of corporations in both theoretic and practical point of view.

Frequency of Course Offering: Every Fall Semester

Prerequisite: None

Classification : Extended Major

Mathematical Economics

Course Code: ECO3001		
Credits	Class Hr	Lab Hr
3	3	0

Mathematics has become a language of modern economics and it allows economists to analyze general properties of economic problems. The purpose of this course is to introduce fundamental aspects of the mathematical tools and basic frameworks of economics models that are currently used in economics. The course will be two folded. The first half of the course will discuss basic mathematics including linear algebra, multivariate calculus and mathematical analysis. In each of those areas, the course will provide economic applications and will study how such mathematical tools are applied to various economics problems. The second half of the course will be devoted to optimization problems with and without constraints. The course will also study their applications in consumer theory, producer theory and welfare economics. Students are expected to have knowledge on single-variable calculus and intermediate microeconomics.

Frequency of Course Offering: Every Fall

Prerequisite: Introductory Mathematics for Economists, Intermediate Microeconomics

Classification : Core Major

Money and Banking

Course Code: ECO3003		
Credits	Class Hr	Lab Hr
3	3	0

The course will examine how financial markets such as those for bonds, stocks, foreign exchange, financial institutions such as banks, insurance companies, mutual funds, and other institutions work and explore the role of monetary policy in macroeconomic stabilization and economic growth. Financial markets and institutions not only affect people's everyday life but also involve flows of an enormous amount of funds throughout the economy, which in turn affect business profits, the production of goods and services, and even the economic well-being of other countries. Money is linked to changes in economic variables (e.g., interest rates and GDP) that affect all the people and are important to health of the economy. Therefore, the study of money, banking, and financial markets will reward students with an understanding of many exciting issues regarding them.

Frequency of Course Offering: Every Fall Semester

Prerequisite: Macroeconomics I and II

Classification : Basic Major

Econometrics

Course Code: ECO3007		
Credits	Class Hr	Lab Hr
3	3	0

The Econometrics course aims to extend the concepts and tools developed in Introduction to Economics Statistics course. The main purpose of this course is to teach students statistical methods and practices to analyze economic data. This course will emphasize both theoretical and practical side of the subject. Starting with estimation and test of hypotheses in the standard linear regression model, the class further covers model specification, heteroscedasticity, autocorrelation, and multicollinearity. Students who are taking this course are expected to learn and use statistical package such as STATA, R, or GAUSS. Throughout the semester, students will use these statistical packages extensively to implement many estimation and testing procedures, and they will be actively involved in computer exercises with real data.

Frequency of Course Offering: Every Spring
Prerequisite: Introduction to Economics Statistics

Classification : Core Major

Labor Economics

Course Code: ECO3008		
Credits	Class Hr	Lab Hr
3	3	0

Labor economists study how labor market works. This course covers the decision-making processes, the behaviors, and their impacts of three "actors" in the labor market: workers, firms, and the government. Important topics addressed by labor economics and this course include: the allocation of worker's time to the labor market, hiring and firing decisions of firms, the worker's decision to invest in human capital, determination of wages, the economic impact of unions, and unemployment. During the semester, theories, models, and related policy issues and debates of important labor market issues, such as labor supply and demand, labor market equilibrium, wage determination, human capital, labor mobility, labor market discrimination, labor unions, incentive pay, and unemployment will be covered. This course pays special attention to Korean labor market and empirical evidence associated with the theories.

Frequency of Course Offering: Every Spring
Prerequisite: Principles of Economics

Classification : Extended Major

Economics of Social Security

Course Code: ECO3021		
Credits	Class Hr	Lab Hr
3	3	0

The Economics of Social Security course deals with the theories, effects, and practices of welfare programs and social insurance programs mainly from a labor economist's point of view. This course pays special attention to the policies of Korea, while practices in other countries are also covered. Critical discussions on the issues based on economic theories are also carried out during the class. The students will learn about the roles of government and market in tackling the social problems and other socioeconomic issues such as poverty, income inequality, and discrimination in the labor market. The major topics covered in this class are welfare programs, old-age pension, unemployment insurance, health insurance, industrial accident compensation insurance, minimum wage, income inequality, intergenerational mobility, and gender issues in the labor market. Students learn economic models and theories, and discuss the effects of those policies on the labor market.

Frequency of Course Offering: Every Fall

Prerequisite: Principle of Economics

Classification : Extended Major

Derivatives & Risk Management

Course Code: ECO3073		
Credits	Class Hr	Lab Hr
3	3	0

Recently, the importance of risk management in corporate business is growing due to the economic recession and unrest in financial market. The primary objective of this course is to study the measures and theoretical foundations of risk management using various types of derivatives such as forwards, futures, options and swaps. Main topics to be covered are: understanding of risks and the importance of its management; kinds and characteristics of derivatives; hedging theories and practices for the commodities and financial assets of stock index, interest rate, and foreign exchange; empirical methods and applications; various strategies of risk management using derivatives; and empirical case studies for the effects of risk management. The students are expected to acquire the basic theories and strategies of risk management in real business fields.

Frequency of Course Offering: Every Spring

Prerequisite: Futures and Options

Classification : Core Major

Futures and Options

Course Code: ECO3074		
Credits	Class Hr	Lab Hr
3	3	0

Recently, various types of derivatives are being traded based on the underlying real and financial assets. The primary objective of this course is to study the theoretical foundations and empirical methodologies related to real and financial futures and options contracts. Main topics that will be covered are: structure and trading practices of futures and options markets; relationship between spot prices and futures prices; risk management strategies and hedging theories focusing on the concepts of hedge ratio and hedging effectiveness; theory and practices of options contracts including the properties of options, binomial trees, and Black-Scholes model; and econometric approach for empirical analyses. The students are expected to acquire various strategies of risk management in real business fields as well as the basic theories related to futures and options markets.

Frequency of Course Offering: Every Fall

Prerequisite: None

Classification : Extended Major

Advanced Finance Theory and Practices

Course Code: ECO3086		
Credits	Class Hr	Lab Hr
3	3	0

The course is concerned with advanced finance theories and practices about those theories. This course provides useful information to students who want professional career in commercial banks, investment banks, asset management companies and insurance companies. More specifically, it is helpful for those who wish to become equity analysts, fixed income securities professionals, financial risk managers, fund managers, and for those who want to obtain financial professional licenses such as chartered financial analysts (C.F.A.), financial risk managers (F.R.M.), which are internationally recognized. Students will be taught on commercial banks, insurance companies, pension plans, mutual funds, hedge funds, and over the counter markets. They also learn about sophisticated products like options, asset-backed securities. Finally, value at risk will be covered in details. Students might be provided with an opportunity to meet financial professionals currently active in Korean financial markets.

Frequency of Course Offering: Every Spring

Prerequisite: Financial Economics (1 or 2), Financial Management, or Investment

Classification : Extended Major

Law and Economic Theory

Course Code: ECO3087		
Credits	Class Hr	Lab Hr
3	3	0

The Law and Economic Theory course is aimed at providing an economic framework for understanding legal rules and institutions. Specific topics and the areas of the law that will be discussed in the class are 1) property, 2) torts and 3) contracts. In each area, the course will provide economic analysis on how various legal rules affect the incentives of individuals and what their welfare implications are, and the course will discuss some of the accepted views from law and economics scholars as expressed in the text book. The course will also discuss some recent findings of research that will be presented in the form of supplementary readings. Students are expected to have knowledge of intermediate microeconomics and game theory (at the level of the standard intermediate microeconomics course). Short review of them will be provided in class.

Frequency of Course Offering: Every Fall

Prerequisite: Intermediate Microeconomics, Game Theory

Classification : Extended Major

Empirical Methods in Applied Microeconomics

Course Code: ECO3088		
Credits	Class Hr	Lab Hr
3	3	0

This course is designed to help students learn how to apply econometric techniques to real-world policy-related questions. The course will focus on experimental and quasi-experimental research designs that can yield credible causal inferences from economic data. The applications will be primarily in labor, education, public, health, urban and micro-development economics, while the material is also relevant for studies in corporate or real estate finance. Objectives are for students to develop the ability to critically evaluate modern research in applied microeconomics, and to ultimately develop a perspective of how their own empirical research in these fields can be conducted. Students will become reasonably proficient in the use of STATA, one of the leading statistical software used for empirical research in applied microeconomics.

Frequency of Course Offering: Every Fall

Prerequisite: Econometrics, Microeconomics

Classification : Extended Major

Empirical Macro-Finance

Course Code: ECO3091		
Credits	Class Hr	Lab Hr
3	3	0

This course focuses on applying empirical macroeconomic and financial data to some of the important economic and finance models that are covered in the intermediate level macroeconomics and asset pricing courses. In comparison to other undergraduate level macro/finance courses, the course is intended to teach students how to collect, interpret and process empirical data and how to apply the data to the theoretic models covered in class to draw some meaningful conclusions that can be used to understand the real economy. Hence a great deal of emphasis will be placed on hands-on experience of analyzing the real world data using a programming language. To that end, this course uses MATLAB. The specific topics of the course include: basic econometric concepts, macroeconomic modelling and forecasting, classical Phillips curve and its application to inflation forecasting, trend estimation in macroeconomics, basic asset pricing theory, capital asset pricing model, autoregressive conditional heteroskedastic processes and topics in international finance.

Frequency of Course Offering: Every Spring

Prerequisite: Macroeconomics, Asset Pricing

Classification : Extended Major

Social Security and Labor Market Policies

Course Code: ECO3092		
Credits	Class Hr	Lab Hr
3	3	0

The objective of this course is to understand the theories of social security and labor market policies and how they are applied to Korean labor market. The main topics of this course are social welfare programs, social insurance programs, and labor market policies. The course is divided into four parts. In the first part, the course covers the theoretical foundation of government programs. The relationship between the market and the government and the effects of government policies are discussed. In the second part, students learn social welfare programs. Income inequality, characteristics of social welfare programs, and effects of social welfare programs are discussed. In the third part social insurance programs are covered. Details of Korea's quadripartite social insurance program and its effects are discussed as well. Finally, the course covers labor market policies. Theories and applications of minimum wage, employment protection, and active labor market policies are discussed.

Frequency of Course Offering: Every Fall

Prerequisite: Principles of Economics

Classification : Core Major

International Finance

Course Code: ECO4003		
Credits	Class Hr	Lab Hr
3	3	0

The International Finance course aims to facilitate students' understanding of theories on international macroeconomics and its applications in real world. The course is devoted to the study of large-scale economic problems in interdependent economies. Throughout the semester, the course will build on familiar macroeconomic ideas, while examining the main features of the global macroeconomy that define and distinguish the field of international macroeconomics. The topics to be covered are: theories of exchange rate determinations in the short and long run; an open-economy variant of the well-known IS-LM model that is widely used in the study of short-run fluctuations in the closed-economy macroeconomics; gains from financial globalization such as consumption smoothing and diversification of income risk at a national level, and so on.

Frequency of Course Offering: Every Spring Semester

Prerequisite: Principle of Economics; Macroeconomics I or II

Classification : Extended Major

Economics of Information and Uncertainty

Course Code: ECO4073		
Credits	Class Hr	Lab Hr
3	3	0

The object of this course is to explore implications of interactions among rational agents. The course will be two folded. In the first half of the course, the course will explore 1) economic agents' choice problems under uncertainty (expected utility, risk aversion and contingent commodity markets), 2) hidden information problems (screening problems) with applications of price discrimination and regulations, and 3) hidden action problems (moral hazard problems) with applications of insurance markets and contracts. In the second half of the course, the course will discuss various issues in game theory focusing on 1) extensive form games and their applications including ultimate game, repeated prisoners' dilemma, dynamic monopoly, 2) bargaining problems (Nash bargaining and strategic bargaining), and 3) Bayesian games and their applications. Students are expected to have knowledge of intermediate microeconomics and game theory (at the level of the standard intermediate microeconomics course).

Frequency of Course Offering: Every Spring

Prerequisite: Intermediate microeconomics, Game theory

Classification : Extended Major

Crime and Economics

Course Code: ECO4079		
Credits	Class Hr	Lab Hr
3	3	0

This course studies economic approaches to understand crime problems. Based on the traditional rational choice model used by economists, students will analyze various issues in understanding crime problems and developing successful crime-control policies. Specifically, this course will discuss determinants of crime, such as poverty, inequality, low education, peer effects, as well as potential crime-control strategies that can improve public safety in an efficient and effective manner. Students will be exposed to recent examples of crime-control policy interventions and learn to evaluate their strengths and weaknesses. This course will also introduce students to the use of econometric methods to recover causal effects of interest from data on crimes and criminals. Students will read and discuss a number of recent empirical studies done by economists, and write a short research paper containing an original empirical analysis.

Frequency of Course Offering: Every Fall
Prerequisite: Econometrics

Classification : Extended Major

Introduction to Quantitative Finance

Course Code: ECO4081		
Credits	Class Hr	Lab Hr
3	3	0

This course is an introductory level computational finance class. Quantitative finance plays a central role in the valuation of financial assets, and such knowledge on computational methods is essential to nurture financial specialists. This course introduces "MATLAB" as the primary programming language. The course will also review some essential concepts in Statistics and Mathematics, such as probability distributions, matrix algebras and differential equations. Students will compute call and put option prices by using three different models – binomial tree models, Monte-Carlo simulations, and finite difference methods. The pricing of exotic option will be lectured as well. In addition, students will also acquire useful techniques for the optimization of portfolio, unconstrained and constrained optimization tools in MATLAB. If time allows, a new programming language, Python would be briefly reviewed as well.

Frequency of Course Offering: Every Fall
Prerequisite: Mathematics for economist, Investments, Econometrics

Classification : Extended Major

Asset Pricing Theory: Continuous Time Model

Course Code: ECO4082		
Credits	Class Hr	Lab Hr
3	3	0

This course is aimed at providing basic knowledge on continuous time finance modelling and its application to the term structure model of interest rates. It has been proven that stochastic calculus is a powerful tool for the valuation of financial assets in both practice and academics. Throughout this course, students will learn about some discrete time finance models, the concept of probability measure, and continuous time stochastic process, especially Brownian motion. After the theoretical analysis, students will study about application of Brownian motion to the context of financial assets and how the application is related to partial differential equations. The Ito's Lemma and Girsanov Theorem plays central role in application procedures. The risk neutral valuation formula will be developed and be applied for the term structure models of interest rates.

Frequency of Course Offering: Every Spring

Prerequisite: Mathematics for Economist, Investments

Classification : Extended Major

Time Series Analysis with Big Data

Course Code: ECO4085		
Credits	Class Hr	Lab Hr
3	3	0

This course focuses on applying empirical financial data to some of the important finance models that are covered in the intermediate-level asset pricing courses. In comparison to other undergraduate-level finance courses, this course is intended to teach students how to collect, interpret and process empirical data and how to apply the data to the theoretic models covered in class to draw some meaningful conclusions that can be used to understand the real financial market. Hence, a great deal of emphasis will be placed on hands-on experience of analyzing the real world data using a programming language. To that end, this course uses MATLAB. The specific topics of the course include: basic econometric concepts, linear time series analysis, capital asset pricing model, conditional heteroskedastic model, high-frequency data analysis, value-at-risk, multivariate time series model, Bayesian analysis, and state-space model.

Frequency of Course Offering: Every Fall

Prerequisite: Econometrics