

## **Program/course structure for the Economics major students**

Economics training at SNU aims to provide students with a thorough understanding of the core areas in Economics in the first two years followed by instruction in sub fields of the student's own choosing in the last two years. Conditional on academic performance the students may also wish to engage in an undergraduate thesis project in the last year. The students can choose from a wide range of sub fields including, but not limited to, game theory and industrial organization, development economics, political economy, public economics, environmental economics, macroeconomics and international finance etc.

The student should take 81 credits in Economics (or Mathematics/English courses recommended by the department) to obtain a major. (These are called major credits). Intermediate and advanced courses may have pre-requisites and the student should make sure they satisfy the pre-requisites before taking a particular course. The pre-requisite requirements will also help the student chart their program of study over the four years.

In addition to courses within the Economics department the students also has to take university wide electives (UWE) and core curriculum courses (CCC) as part of their degree. For an Economics major, a UWE is a course offered by a department other than the Economics department and is not listed as a mandatory or an elective course for the Economics major. It is the student's responsibility to ensure that they fulfill any university requirements regarding UWE courses. The department has given below a possible structure of the program which allows the student 8 slots for UWEs.

The student has to earn a minimum of 123 credits (81 major credits + 18 UWE credits + 24 CCC credits) to be eligible for a BS Economics degree.

A student can, with permission of the Undergraduate Advisor, opt for BS Economics with Honours. The student will have to earn credits from 4 other courses, to be decided by the Undergraduate Advisor.

The following is the basic structure of a four year major in Economics.

### **Semester 1**

ECO 101      **Principles of Microeconomics** (4 credits)  
ECO 191      **Logic and Scientific Methods** (3 credits)  
MAT 100      **Pre-calculus** (4 credits)  
ENG 104      **Academic writing** (3 credits)  
CCC

### **Semester 2**

ECO 102      **Principles of Macroeconomics** (4 credits)  
MAT 101      **Calculus** (4 credits)  
ECO 121      **Basic Statistics** (4 credits)  
UWE  
CCC

### **Semester 3**

ECO 301      **Intermediate Microeconomics** (4 credits)  
ECO 201      **Game Theory and Economics** (3 credits)

ECO 291     **Introduction to programming** (4 credits)  
UWE  
CCC

**Semester 4**

ECO 302     **Intermediate Macroeconomics** (4 credits)  
ECO 221     **Introductory Econometrics** (4 credits)  
ECO 232     **History of Economic Thought** (3 credits)  
UWE  
CCC

**Semester 5**

ECO 401     **Advanced Microeconomics/General Equilibrium** (3 credits)  
ECO XXX     **Departmental elective** (3 credits)  
ECO XXX     **Departmental elective** (3 credits)  
UWE  
CCC

**Semester 6**

ECO XXX     **Departmental Elective** (3 credits)  
ECO XXX     **Departmental Elective** (3 credits)  
UWE  
UWE  
CCC

**Semester 7**

ECO XXX     **Departmental Elective** (3 credits)  
ECO XXX     **Departmental Elective** (3 credits)  
ECO XXX     **Departmental Elective /ECO 499 I Research project** (0 credits)  
UWE  
CCC

**Semester 8**

ECO XXX     **Departmental Elective** (3 credits)  
ECO XXX     **Departmental Elective** (3 credits)  
ECO XXX     **Departmental Elective /ECO 499 II Research project** (6 credits)  
UWE  
CCC

**List of departmental electives offered by the department**

This is a complete list of electives that may be offered by the department. What subset of these courses is offered in any given term will depend on available faculty strength and faculty and student interests.

Industrial Organization  
International Trade  
International Finance  
Public Economics  
Issues in Economic Development

Political Economy  
Money and Banking  
Principles of Urban Economics  
Advanced Microeconomics  
Corporate Finance  
Topic in Environmental Economics  
Topics in Microeconomics  
Topics in Macroeconomics  
Topics in Game Theory  
Analysis of cross section and panel data  
Topics in time series Econometrics  
Labour Economics  
Financial Economics and Asset Pricing  
Economics of Sports  
Law and Economics

## Requirements for a minor in Economics

Students wishing to take courses in intermediate/advanced courses in Economics will have to demonstrate suitable preparation in aspects of mathematics (including calculus, algebra and statistics). The department requires the students to complete seven courses successfully to earn a minor degree in Economics.

The course structure is as follows:

ECO 101	<b>Principles of Microeconomics (O)</b>
ECO 102	<b>Principles of Macroeconomics (E)</b>
ECO 301	<b>Intermediate Microeconomics (O)</b>
ECO 302	<b>Intermediate Macroeconomics (E)</b>
ECO 221	<b>Introductory Econometrics (E)</b>
ECO XXX	<b>Elective</b>
ECO XXX	<b>Elective</b>

The courses marked with an **(O)** will *typically* be offered in **odd semesters** where as those marked with an **(E)** will *typically* be offered in **even semesters**. Electives can be chosen from amongst the courses being offered by the department in any given semester. However only 2<sup>nd</sup> or higher level courses can be taken as electives.

Intermediate and advanced courses may have pre-requisites and the students should ensure that they satisfy these before taking a course. The students **do not** have to take the courses in the above order. They can complete a course as long as they satisfy the pre-requisites for that course. For example, ECO 232 can be completed before ECO 301. (Please check with the course instructor to see if you satisfy the pre-requisites for the course).

Students should ensure that they can fit the courses in their time table. Unfortunately the department cannot entertain requests to adjust the time table to suit individual students.

You must sign up for the Minor before the end of your 6th semester. However, it is advisable to do so earlier so that there is sufficient time to plan your courses. The best time is during your 3rd and 4th semesters. Registration is also subject to availability of slots.

If you fail to complete the minor during your first 4 years, you may have to spend an extra semester to complete it. If you do so, any scholarship or fee waiver you were granted for your regular course of study will lapse and you will have to pay the full fees for the extra period.

## **UG Economics course descriptions**

### **ECO 101: Principles of Microeconomics**

This course is designed to provide a solid foundation for economic analysis and a broad understanding of the economic issues at the level of individuals and firms. This course begins with a discussion of supply and demand and the basic forces that determine equilibrium in a market economy. Also covered are different kinds of market structures and their impact on a firm's optimal decisions. Students are introduced to concepts of welfare and some applications of the theory. **(3:1:0)**

**Pre-requisites: None**

### **ECO 102: Principles of Macroeconomics**

This course is devoted primarily to macroeconomics with emphasis on the determination of the aggregate level of economic activity, analysis of government policies, short-run economic stability (i.e. degree of unemployment), the rate of inflation and long-run economic growth. **(3:1:0)**

**Pre-requisites: ECO 101**

### **ECO 121: Basic Statistics**

The course begins with a survey of basic descriptive statistics and data sources and then covers elementary probability theory, sampling, estimation, hypothesis testing, correlation, and regression. The course focuses on practical issues involved in the substantive interpretation of economic data using the techniques of statistical inference. **(3:1:0)**

**Pre-requisites: None**

### **ECO 181: Mathematical Methods**

This course will introduce students to the major mathematical tools that are used in modern economics, and these tools to various economic questions. The tools to be discussed may include real analysis, linear algebra, constrained optimization, duality, dynamics, fixed point theorems, and optimal control theory. **(3:1:0)**

**Pre-requisites: None**

### **ECO 191: Logic and Scientific Methods**

This is an introduction to mathematical logic and scientific methods that provides an analytical foundation. The course begins with an introduction to elements of logic and deductive method and will mostly emphasize on theory of sentential calculus, identity, relations and deductive methods. Finally, applications of logic are presented towards a construction of mathematical theory. **(3:0:0)**

**Pre-requisites: None**

### **ECO 201: Game Theory and Economics**

This course is an introduction to non-cooperative game theory. We will study the basic concepts of Nash Equilibrium, Correlated Equilibrium, Dominance & rationalizability, Sub Game perfection and Bayesian Equilibrium. We will try to apply these concepts to solve problems from various sub-disciplines of economics like industrial organization, environmental economics and public economics. **(3:1:0)**

**Pre-requisites: ECO 101**

### **ECO 221: Introductory Econometrics**

This course introduces the students to the basics of the linear regression model. The topics included in the course are: the simple linear model, multiple linear models, classical assumptions about disturbances, hypothesis testing, violation of classical assumptions: auto-correlation and

heteroskedasticity, issues of multicollinearity, omitted variable bias, functional forms, dummy variables, outliers, goodness of fit, instrumental variables. **(3:1:1)**

**Pre-requisites: ECO 101, ECO 121 or equivalent**

### **ECO 211: Money and Banking**

This course studies the role that financial markets, institutions, and money play in resource allocation. Financial intermediation and the role of banks in the economic system are analysed and the economic rationale behind banking regulation is studied. The course examines how monetary policy influences interest rates and asset markets, such as the bond market and the stock market. Finally, the instruments and goals of monetary policy are discussed, focusing in particular on credibility and commitment for central banks. All of the questions are explored analytically, using the tools of economic theory. **(3:0:0)**

**Pre-requisites: ECO 101, ECO 102**

### **ECO 232: Indian Economic History**

This course is an attempt to understand how historical institutions shape present economic outcomes but will focus on it from an Indian perspective. What have been the long lasting impacts of historical Indian institutions on economic outcomes? What did the nature of the Indian economy look like two centuries ago? How did the experience under the British Empire change Indian society and economy? We will look at theories dealing with the persistence of the caste system, the effect of global events on the pre-independence Indian politics, etc. **(3:0:0)**

**Pre-requisites: ECO 101, ECO 102**

### **ECO 241: Principles of Urban Economics**

This course covers the main economic forces that lead to the existence of cities and regional agglomeration. In particular it will concentrate on the theory and evidence of the emergence of cities and their effect on worker productivity, urban amenities, and congestion. The focus will be on measuring these urban characteristics, as well as the design of optimal urban policy. The course will analyze the role cities play in aggregate economic development. **(3:0:0)**

**Pre-requisites: ECO 301**

### **ECO 243: Basic Law and Economics**

Here we focus on the relationship of economic principles to law and the use of economic analysis to study legal problems. Topics will include: property rights and intellectual property; analysis of antitrust and of legal decision-making. **(3:0:0)**

**Pre-requisites: ECO 101, ECO 102**

### **ECO 301: Intermediate Microeconomics**

This course gives a detailed introduction to consumer and production theory. We use the concepts developed in these theories to build the structure of welfare economics. We study the efficiency of markets in resource allocation and the role of government in case of market failures. **(3:1:0)**

**Pre-requisites: ECO 101, ECO 181 or equivalent**

### **ECO 302: Intermediate Macroeconomics**

This course discusses the facts and theories about the determination of per capita income and its differences across countries and across time. In particular, it will include the study of economic fluctuations in output and employment and the role of government in influencing these aggregate variables through its monetary and fiscal policies. **(3:1:0)**

**Pre-requisites: ECO 102, ECO 181 or equivalent**

**ECO 321: Econometrics and Data Methods**

This course will build on the Introduction to econometrics course. We will build on the linear regression model by looking at additional topics in linear regressions, simultaneous equations, program evaluation etc. This course will include a “lab” component where students with the help of statistical software like STATA will learn how to collect, analyse and interpret economic data. **(3:1:1)**

**Pre-requisites: ECO 221**

**ECO 342: Introductory Environmental Economics**

Most environmental problems are problems of market failure. In this course, we will study the public policy response to such problems in an economic setting. We compare the different responses by using different criterion like equity, economic efficiency and environmental sustainability. We will study conditions of optimal extraction of renewable and non-renewable natural resources in a dynamic setting. **(3:0:0)**

**Pre-requisites: ECO 301**

**ECO 351: Corporate Finance**

This course considers a wide range of topics in theoretical corporate finance (broadly interpreted). Topics include capital structure decisions, agency conflicts in the firm, dividend policy, security design, optimal financial contracting, the theory of the firm, the market for corporate control, and banking and financial intermediation, among others. The primary focus is on how asymmetric information, agency conflicts, strategic interactions, and incomplete contracting affect corporate financial decision-making. **(3:0:0)**

**Pre-requisites: ECO 301, ECO 201**

**ECO 361: International Trade and policy**

International trade is the flow of goods across countries. This will be a two part course. The first part of the course will focus on models of international trade: the basic Ricardian model, the Heckscher-Ohlin-Samuelson model, etc. The second part will focus on the empirical literature in international trade, including topics like the link between trade and growth, fair trade etc. We may also look at the economics and politics of free trade agreements. **(3:0:0)**

**Pre-requisites: ECO 301, ECO 221**

**ECO 371: Public Economics**

An introductory public economics course that will primarily focus on the role of government in market economy, namely provision of public goods, imposition of direct and indirect taxes and redistribution of income, among others. The issue of resource allocation and its implications, in terms of efficiency and equity, will be addressed in detail throughout. A few applications and policy issues will be presented. **(3:0:0)**

**Pre-requisites: ECON 301**

**ECO 401: Topics in Microeconomics**

An advanced course in undergraduate microeconomics, where some of the following advanced topics in microeconomics will be presented in detail: consumer behaviour, firm decision and factor markets, general equilibrium, welfare economics, imperfect competition, applications of game theory, asset pricing, uncertainty and asymmetric information, asset markets. **(3:0:0)**

**Pre-requisites: ECO 301**

**ECO 411: Topics in Macroeconomics**

This course concentrates on the fundamentals of modern macroeconomic modelling and applications

for forecasting and policy analysis. Attention will focus on representing such macroeconomic phenomena as inflation, unemployment, the business cycle, productivity, and secular growth. Students will build a macro model. Topics will include how to simulate a range of fiscal and monetary policies and how to measure their effectiveness for stabilization and growth. **(3:1:1)**

**Pre-requisites: ECO 302**

#### **ECO 421: Advanced Econometrics**

This is an advanced undergraduate econometrics course for those who want to go deeper into econometric theory and its applications. Topics covered will include instrumental variables, panel data methods, difference-in-difference techniques, limited dependent variable methods and experimental methods. Students will be required to be familiar with and use various econometric softwares. **(3:1:1)**

**Pre-requisites: ECO 321**

#### **ECO 442: Topics in Environmental Economics**

This course deal with issues related to third world environmental problem. It will show of issues of development and environment is inextricably related to each other in a third world context. We will cover topics like CPR theory, Poverty and Environment, Gender and Environment and the Political Economy of Environmental Policy. **(3:0:0)**

**Pre-requisites: ECO 342**

#### **ECO 445: Economics of Sports**

This course aims to provide students with detailed understanding of the application of theoretical and empirical methods to the field of sports, and to explore policy issues impinging on competitive balance and uncertainty of outcome in professional team sports leagues. **(3:0:0)**

**Pre-requisites: ECO 301, ECO 201**

#### **ECO 446: Industrial Organization**

The course focusses on strategic interactions of firms in an imperfectly competitive market/industry. Topics include monopoly, price discrimination, oligopoly models, product quality and differentiation, advertising, vertical integration, patents, R&D and innovation, scope for government regulation and antitrust/competition policies. **(3:0:0)**

**Pre-requisites: ECO 301, ECO 201**

#### **ECO 447: Labour Economics**

This course is an introduction to labour economics with an emphasis on applied microeconomics and empirical analysis. We will cover topics like labour supply and demand, minimum wage arguments, human capital, education, discrimination (along gender, caste, religious lines), inequality, social mobility etc. **(3:0:1)**

**Pre-requisites: ECO 301, ECO 221**

#### **ECO 451: Financial Economics and asset pricing**

An introductory course on asset pricing that will introduce various financial assets and it's pricing mechanism. Beginning with mean variance models, the course will move to arbitrage pricing theory. Aspects of commodity market, including hedging, arbitrage and speculation will also be presented in case of various financial assets/instruments. **(3:0:0)**

**Pre-requisites: ECO 301, ECO 302**

#### **ECO 461: International Economics**

In this course we will study the flow of goods and services (international trade) and capital (international finance) across borders. Topics covered will include a number of issues of contemporary interest such as: free trade agreements, debates on globalization (including FDI, import barriers etc.), current account deficits, the global financial architecture and the recent financial crisis. **(3:0:0)**

**Pre-requisites: ECO 301, ECO 302**

#### **ECO 462: International Finance and Policy**

An introductory course in international finance that focuses on topics as; national income accounting and account of cross-country trades, balance of payments, exchange rate and its determination, fixed and flexible exchange rate, interest rate, currency and monetary arrangements, capital flows and financial crisis. **(3:0:0)**

**Pre-requisites: ECO 301, ECO 302**

#### **ECO 471: Issues in Economic Development**

This course introduces the students to issues that face economic agents in developing economies like India. We will tackle various issues pertaining to a developing economy: households and gender differences, health and nutrition, land and labour markets in developing countries, credit and insurance markets etc. We will also try and understand what and how economists can contribute to the challenge of dealing with extreme poverty.

**Pre-requisites: ECO 301, ECO 221**

#### **ECO 481: Topics in Game Theory**

This is an advanced course in game theory and covers the refinements of the equilibrium concepts in both static and dynamic environments. Topics include Bayesian Nash equilibrium, dynamic games of perfect information, and imperfect information, sequential equilibrium, signalling games, and repeated games.

**Pre-requisites: ECO 301, ECO 201**