PRESIDENCY UNIVERSITY
KOLKATA

Structure and Detailed Syllabus

04 Years Bachelor Programme under Choice Based Credit System for B. Sc. Honours with Research in Economics

(Total Credits: 194)

Effective from 2023-2024 Academic Session

Department of Economics
(Faculty of Natural and Mathematical Sciences)
Presidency University
Hindoo College (1817-1855), Presidency College (1855-2010)
86/1, College Street, Kolkata - 700 073
West Bengal, India

Content

04 Years Bachelor Programme under Choice Based Credit System for B. Sc. Honours with Research in Economics

Course Structure

There is a total of twenty-three Economics Major Courses including two project/dissertation papers that students are required to take across eight semesters. Project/Dissertation papers will be offered in the seventh and eighth semester. Two compulsory Skill Enhancement Papers will be offered in the third and fourth semester. In addition to Major Courses in Economics, a student of B. Sc. Honours with Research in Economics is required to take four Minor Courses, two Value-Added Courses, two Ability Enhancement Compulsory Course and three Multidisciplinary Courses in the first two years. Two other department-specific Minor Courses will be offered in the seventh and eighth semester. Students will be doing a summer internship after the second year.

Contact Hours - Each 6-credit course has either 5 lectures and 1 tutorial (per group) per week or 4 lectures and 2 practical classes per week. Each 4-credit course has either 3 lectures and 1 practical class per week or 3 lectures and 1 tutorial (per group) per week.

Note on Course Readings: The nature of several of the courses is such that only selected readings can be specified in advance. Reading lists will be updated and topic-wise readings would be specified at regular intervals, ideally on an annual basis.

Academic Session

Each Semester shall contain at least 16 Teaching Weeks.
Odd Semesters: Semester One, Three, Five and Seven -   Tentatively from July to December*
Even Semesters: Semester Two, Four, Six and Eight -   Tentatively from January to June*
*Actual duration of semesters will be specified in the Academic Calendar of the University.

Credit Structure

COURSE TYPE	Credit per paper	Total Paper	CREDIT	
			Theory + Practical	Theory + Tutorial
Major Course (C)	6	15	15x4 + 15x2 = 90	15x5 + 15x1= 90
Major Course (C)	4	06	6x3 + 6x1 = 24	6x3 +6x1 = 24
Major Course (C) (Project/Dissertation)	4	01	04	04
Major Course (C) (Project/Dissertation)	8	01	1x8 = 08	1x8 = 08
Minor Course (MC)	6	04	4x4 + 4x2 = 24	4x5 + 4x1= 24
Minor Course (MC)	4	02	2x3 + 2x1 = 08	2x3 +2x1 = 08
Skill Enhancement Course (SEC)	4	01	01x4 = 04	1x4 = 04
Skill Enhancement Course (SEC)	5	01	01x5 = 05	1x5 = 05
Ability Enhancement Compulsory Course (AECC) – English Communication/MIL	4	01	01x4 = 04	1x4 = 04
Ability Enhancement Compulsory Course (AECC) – English Communication/MIL	4	01	01x4 = 04	1x4 = 04
Multidisciplinary Course (MDC)	3	03	03x3 = 09	3x3 = 9
Value added course – (Environmental Science)	3	01	01x3 = 03	1x3 = 03
Value added course	3	01	01x3 = 03	1x3 = 03
Summer Internship	4	01	01x4 = 04	1x4 = 04
Total		**39**	**194**	**194**

Total Marks Distribution

COURSE TYPE	Total Paper	Total Marks
Major Course (C)	21	21x50 = 1050
Major Course (C) – Project Part I	01	01x50 =50
Major Course (C) – Project Part II	01	01x100 = 100
Minor Course (MC)	06	06x50 = 300
Skill Enhancement Course (SEC)	02	02x50 = 100
Ability Enhancement Compulsory Course (AECC)*	02	02x50 = 100
Multidisciplinary Course (MDC)	03	03x50 = 150
Value Added Course (VAC) 1*	01	01x50= 50
Value Added Course (VAC) 2	01	01x50 = 50
Summer Internship	01	01x50 = 50
Total	**39**	**2000**

* These courses will not be offered by the Department of Economics

Credit allocation, Course type and evaluation pattern (Marks) for 04 Years Bachelor Programme under Choice Based Credit System for B. Sc. Honours with Research in Economics											
Sem	Course Type	Paper Code	Course Name	Type of course	Credits				Evaluation pattern (Marks)		
					Theory	Tutorial	Practical	Total	End Sem (35)	IA (15)	Total
I	Major	ECON101C01	Introductory Microeconomics	T	5	1	-	6	35	15	50
	Major	ECON102C02	Mathematical Methods in Economics - I	T	5	1	-	6	35	15	50
	AECC^	103AECC01	English Communication /MIL	T/S				4			50
	Minor	ECON104MC01	Introductory Microeconomics	T	5	1	-	6	35	15	50
	Multidisciplinary	ECON141MDC01	Film Appreciation	S	-	-	-	3	-	50	50
			Total (First Semester)					**25**			**250**
II	Major	ECON151C03	Introductory Macroeconomics	T	4	-	2	6	35	15	50
	Major	ECON152C04	Mathematical Methods in Economics-II	T	5	1	-	6	35	15	50
	AECC^	153AECC02	English Communication /MIL	T/S				4			50
	Minor	ECON154MC02	Introductory Macroeconomics	T	5	1	-	6	35	15	50
	Multidisciplinary	ECON191MDC02	Emotional Intelligence and Organizational Excellence	S	-	-	-	3	-	50	50
	Multidisciplinary	ECON192MDC03	Sports Management	S	-	-	-	3	-	50	50
			Total (Second Semester)					**28**			**300**
III	Major	ECON201C05	Intermediate Microeconomics-I	T	5	1	-	6	35	15	50
	Major	ECON202C06	Intermediate Macroeconomics-I	T	5	1	-	6	35	15	50
	Skill Enhancement	ECON241SEC01	Data Analysis with R	S	-	-	-	4	-	50	50
	Value Added^	ENVS204VAC01	Environmental Science	T/S	-	-	-	3	-	50	50
	Minor	ECON205MC03	Indian Economy I	T	5	1	-	6	35	15	50
			Total (Third Semester)					**25**			**250**
IV	Major	ECON251C07	Intermediate Microeconomics-II	T	5	1	-	6	35	15	50
	Major	ECON252C08	Intermediate Macroeconomics-II	T	5	1	-	6	35	15	50
	Skill Enhancement	ECON291SEC02	Working with Data	S	-	-	-	5	-	50	50
	Value Added	ECON292VAC02	Stock Market for Beginners	S	-	-	-	3	-	50	50
	Minor	ECON255MC04	Indian Economy II	T	5	1	-	6	35	15	50
			Total (Fourth Semester)					**26**			**250**

Sem	Course Type	Paper Code	Course Name	Type of course	Credits				Evaluation pattern (Marks)		
					Theory	Tutorial	Practical	Total	End Sem (35)	IA (15)	Total
V	Major	ECON341SI01	Summer Internship	S	-	-	-	4	-	50	50
	Major	ECON301C09	Statistical Methods for Economics	T	5	1	-	6	35	15	50
	Major	ECON302C10	Development Economics	T	4	-	2	6	35	15	50
	Major	ECON303C11	Indian Economy	T	5	1	-	6	35	15	50
			Total (Fifth Semester)					**22**			**200**
VI	Major	ECON351C12	Econometrics I	T	4	-	2	6	35	15	50
	Major	ECON352C13	Econometrics II	T	4	-	2	6	35	15	50
	Major	ECON353C14	International Economics	T	5	1	-	6	35	15	50
	Major	ECON354C15	Public Economics	T	5	1	-	6	35	15	50
			Total (Sixth Semester)					**24**			**200**
VII	Major	ECON401C16	Econometrics III	T	3	-	1	4	35	15	50
	Major	ECON402C17	Causal Inference and Impact Evaluation	T	3	-	1	4	35	15	50
	Major	ECON403C18	Financial Economics	T	3	-	1	4	35	15	50
	Major	ECON441C19	Project/Dissertation	S	-	-	-	4	-	50	50
	Minor #	ECON442MC05	Research Methodology in Economics	S	-	-	-	4	-	50	50
			Total (Seventh Semester)					**20**			**250**
VIII	Major	ECON451C20	Game Theory and Information Economics	T	3	1	-	4	35	15	50
	Major	ECON452C21	Resource and Environmental Economics	T	3	1	-	4	35	15	50
	Major	ECON453C22	Economics of Growth	T	3	1	-	4	35	15	50
	Major	ECON491C23	Project/Dissertation	S	-	-	-	8	-	100	100
	Minor #	ECON492MC06	Research and Publication Ethics	S	-	-	-	4	-	50	50
			Total (Eighth Semester)					**24**			**300**
								194			**2000**

Table title: Credit allocation, Course type and evaluation pattern (Marks) for 04 Years Bachelor Programme under Choice Based Credit System for B. Sc. Honours with Research in Economics

will be offered for students of Department of Economics only; ^ will not be offered by the Department of Economics; * T type courses are *Taught* courses for which there will be an end-semester examination of 35 marks and internal assessment of 15 marks. S type courses are *Sessional* which will be continuously assessed during the semester.

Description of Major Courses

Semester 1

ECON101C01: INTRODUCTORY MICROECONOMICS
Credit - 06 [Theory: 05; Tutorial: 01]
Contact hours per week: 06

Course Description

This course is designed to expose the students to the basic principles of microeconomic theory, consumer and producer behaviours and issues related to a perfectly competitive market. The course will illustrate how microeconomic concepts can be applied to analyse real-life situations.

Teaching methods will include lectures supported by tutorial.

1. Exploring the subject matter of Economics

Why study economics? Scope and method of microeconomics - reading and working with graphs.

+The economic problem: Scarcity and choice - production possibility curve – trade off, opportunity cost and decision making; incentives and information – prices (absolute and relative prices) property rights and profits.

Decision takers- households, firms and central authorities; choice by command and choice by market.

Alternatives to the price system – Rationing by Queues, Rationing by Lotteries, Rationing by Coupons.

Economic Systems.

2. Supply and Demand: How Markets Work, Markets and Welfare

a. Elementary theory of demand – determinants of household demand and market demand, and shifts in the demand curves
b. Elementary theory of supply - factors influencing supply, derivation of the supply curve, and shifts in the supply curve
c. Determination of equilibrium price in a competitive market - Existence, Uniqueness and Stability of equilibrium
d. Elasticity and its application
e. Government Interventions and their Effects on market equilibrium – price ceiling, price floor and commodity taxation
f. Consumer surplus, producer surplus and the efficiency of the markets

3. The Households

a. Cardinal & Ordinal utility
b. Axioms of rational choice, the consumption decision – description of preferences (representing preferences with indifference curves) - properties of indifference curves; budget constraint; optimum and consumer's equilibrium
c. Comparative statics: income and price changes – derivation of price consumption curve, income consumption curve and Engel's curve; demand for all other goods and price changes
d. Substitution and income-effects and law of demand; Hicks and Slutsky compensated demand curves and Marshallian demand curves for normal and inferior goods equation; Slutsky equation; concepts of gross and net substitutes and complements
e. Compensating and equivalent variation, and consumer surplus – concepts of Marshallian and compensated demand curves.

4. Production and Costs

a. Technology and technological efficiency – general concept of production function – concepts of total product, average product and marginal product –return to factor and returns to scale - isoquants and

diminishing rate of factor substitution – elasticity of substitution –some examples of technology (fixed proportion, perfect substitute, Cobb – Douglas Production Function, CES Production Function), General concept of homogeneous and homothetic production function and their properties.

b. Economic / Opportunity cost and accounting cost, concept of sunk cost; time dimension of cost – cost in the short run – total cost – fixed and variable cost – marginal cost – average cost – derivation of short run cost - long run cost function - functional coefficient and shape of long run average cost — relation between short run and long run cost; expansion path; relation between expansion path and long run total cost curve.

5. The Firm and Perfect Market Structure

a. Defining a firm - firm's legal forms; profit maximization hypothesis
b. Behaviour of profit maximizing firms and the production process.
c. Short run costs and output decisions.
d. Costs and output in the long run.

Readings

1. Joseph E. Stiglitz and Carl E. Walsh, Economics, W.W. Norton & Company, Inc., New York, International Student Edition, 4th Edition, 2007.
2. Karl E. Case and Ray C. Fair, Principles of Economics, Pearson Education Inc., 8th Edition, 2007.
3. Green: Consumer Theory, The Macmillan Press Ltd.
4. Hal R. Varian, Intermediate Microeconomics, a Modern Approach, W.W. Norton and Company/Affiliated East-West Press (India), 8th edition, 2010. The workbook by Varian and Bergstrom may be used for problems.
5. J. M. Perloff: Microeconomics – Theory and Application with Calculus, Addison Wesley.
6. C. E. Ferguson and J. P. Gould: Microeconomic Theory, The Irwin series in economics.

ECON102C02: MATHEMATICAL METHODS IN ECONOMICS – I
Credit - 06 [Theory: 05; Tutorial: 01]
Contact hours per week: 06

Course Description

The objective of this course is to transmit the body of basic mathematics that enables the study of economic theory at the undergraduate level, specifically the courses on microeconomic theory, macroeconomic theory, statistics and econometrics set out in this syllabus. In this course, particular economic models are not the ends, but the means for illustrating the method of applying mathematical techniques to economic theory in general.

Teaching methods will include lectures supported by tutorial.

1. Basic concepts
a. Bounds and intervals
b. Limits, continuity and differentiability

2. Functions of one variable
a. Relations and functions, into and onto functions, inverse functions, functions of different types and their graphs—quadratic, polynomial, power, exponential, and logarithmic.
b. Derivatives of first and second order and their properties.
c. Convex/concave functions, quasi convex/concave
d. Economic applications: Static stability of equilibrium

3. Single variable optimization
a. Optimization: Local vs global optimum
b. Conditions for optimization: Rolle's theorem, Maclaurin series, Taylor series, Lagrange form of remainder, necessary and sufficient conditions
c. Economic applications

4. Functions of several variables
a. Geometric representations: graphs and level curves
b. Differentiable functions: characterizations, properties with respect to various operations and applications
c. Second order derivatives: properties and applications
d. Homogeneous and homothetic functions, Euler's theorem
e. Economic applications

5. Linear Algebra
a. Vectors and matrices: Concepts, operations with matrices, inverse matrix, traces/spur, rank, singularity
b. Determinants: Properties, Laplace expansion, minor and co-factor, alien co-factor
c. Systems of linear equations: Linear independence, rank of a matrix, Cramer's Rule
d. Applications: Solving linear systems

Readings
1. K. Binmore: Mathematical Analysis, Cambridge
2. E. Silberberg & Suen: The Structure of Economics, McGraw Hill.
3. K. Sydsaeter and P. Hammond, Mathematics for Economic Analysis, Pearson Education Asia: Delhi.
4. A. Chiang & K. Wainwright: Fundamental Methods of Mathematical Economics, McGraw Hill.
5. Simon & Blume, Mathematics for Economists, Viva Books.
6. M. Hoy, J. Livernois, C. McKenna, R. Rees & T. Stengos, Mathematics for Economics. MIT Press.
7. Gilbert Strang (2016) Matrix Algebra and its applications, Wellesley-Cambridge Press.

Semester 2

ECON151C03: INTRODUCTORY MACROECONOMICS
Credit - 06 [Theory: 04; Practical (Computer Lab): 2]
Contact hours per week: 08

Course Description

This course aims to introduce the students to the basic concepts of Macroeconomics. Macroeconomics deals with the aggregate economy. This course discusses the preliminary concepts associated with the determination and measurement of aggregate macroeconomic variables like savings, investment, GDP, money, inflation, and monetary and fiscal policies.

Teaching methods will include lectures supported by tutorial and practicum.

1. Introduction to Macroeconomics and National Income Accounting
Introduction to Macroeconomic variables; microeconomic and macroeconomic approaches; basic issues studied in macroeconomics; measurement of GDP, GNP, NDP, NNP and NI; circular flow of income; problems encountered in measuring National Income; real versus nominal GDP -CPI, WPI and GDP deflator, National Income as a measure of welfare; National Income accounting for an open economy; balance of payments: current and capital accounts.

2. Money
Definitions of money – M1, M2, M3 and M4; Functions of money; determination of money supply; money creation by commercial banks; money multiplier; control of money supply by the central bank tools of monetary policy.

3. Inflation and Unemployment
a. Meaning of inflation, cost of inflation and hyperinflation
b. Money supply and Inflation - quantity theory approach

c. Concepts of unemployment, natural rate of unemployment, structural unemployment, frictional unemployment, cyclical unemployment, involuntary and voluntary unemployment; Inflation-unemployment relationship: an introduction

4. The Closed Economy in the Short Run

Simple Keynesian model of income determination - Keynesian consumption function, Autonomous investment and Income-Expenditure equilibrium, multiplier, Paradox of thrift; IS-LM model - Investment function and IS curve, Asset market equilibrium and LM curve, Determination of equilibrium income and interest rate, Comparative Statics - Monetary policies and fiscal policies, Extensions (Classical adjustment in IS-LM model, IS-MP model)

Readings

1. Wilfrid Beckerman, An introduction to national income analysis, ELBS
2. Mankiw, N.G., Macroeconomics, Worth Publishers, 7th edition, 2010.
3. Froyen, R.T., Macroeconomics, Pearson Education Asia, 2nd edition, 2005.
4. Sikdar, S., Principles of Macroeconomics, Oxford University Press, 2nd edition, 2011.
5. Hicks, J. R., M. Mukherjee and Shyamal K. Ghosh, the Framework of the Indian Economy: An Introduction to Economics, Oxford University Press, 1989
6. Dornbusch, R., Fischer, S. and Startz, R., Macroeconomics, McGraw Hill, 12th edition, 2014.
7. David Romer, Keynesian macroeconomics without the LM curve, Journal of Economic Perspectives, 2000, 14(2): 149-169.
8. Chandana Ghosh and Ambar Ghosh, Macroeconomics, Second edition, EEE, 2021.

5. Macroeconomics lab

Analysis of trends in macro-economic variables across countries
Checking macroeconomic theories and assumptions
Preparing presentations and reports based on analysis

Data sources:

1. RBI Handbook of Economics & Statistics
2. UNESCO site
3. ILO site
4. The World Bank Development Indicators site
5. Federal Reserve Bank, St. Louis site

ECON152C04: MATHEMATICAL METHODS IN ECONOMICS - II
Credit - 06 [Theory: 05; Tutorial: 01]
Contact hours per week: 06

Course Description

The objective of this course is to transmit the body of basic mathematics that enables the study of economic theory at the undergraduate level, specifically the courses on microeconomic theory, macroeconomic theory, statistics and econometrics set out in this syllabus. In this course, particular economic models are not the ends, but the means for illustrating the method of applying mathematical techniques to economic theory in general.

Teaching methods will include lectures supported by tutorial.

1. Unconstrained optimization with n variables

a. Unconstrained optimization, necessary and sufficient conditions, local and global optima, notion of saddle point
b. Implicit function theorem, and its application to comparative statics problems
c. Economic applications

2. Constrained optimization

a. Effect of a constraint; Finding stationary value

b. Lagrange Multiplier method: Meaning of Lagrange multiplier, generalization of LM method
c. Second Order conditions: Bordered Hessian determinant, quasi concavity and quasi convexity with economic applications
d. The implicit function theorem, and its application to comparative statics problems
e. Maximum value function and envelope theorem

3. Difference and differential equations
a. Difference equations (first and second order) and their applications
b. Differential equations (first and second order) and their applications

Readings
1. K. Sydsaeter and P. Hammond, Mathematics for Economic Analysis, Pearson Educational Asia: Delhi.
2. A. Chiang & K. Wainwright: Fundamental Methods of Mathematical Economics, McGraw Hill.
3. E. Silberberg & Suen: The Structure of Economics, McGraw Hill.
4. M. Hoy, J. Livernois, C. McKenna, R. Rees & T. Stengos, Mathematics for Economics. MIT Press.

Semester 3

ECON201C05: INTERMEDIATE MICROECONOMICS – I
Credit - 06 [Theory: 05; Tutorial: 01]
Contact hours per week: 06

Course Description

The course is designed to provide a sound training in microeconomic theory to formally analyze the behaviour of individual agents, especially under uncertainty. Since students are already familiar with the quantitative techniques in the previous semesters, mathematical tools are used to facilitate understanding of the basic concepts. This course looks at the behaviour of the consumer and the producer and also covers the behaviour of a competitive firm.

Teaching methods will include lectures supported by tutorial.

1. Consumer Theory
a. Choice under uncertainty: Expected utility theorem and attitude towards risk - utility function and expected utility; risk preference and risk aversion; concept of risk premium and certainty equivalence. Risk spreading: Role of the stock market - demand for risky assets – measuring risk - trade-off between risk and return; Reducing risk: demand for Insurance – fair premium, co-insurance, co-payments/ deductibles; Risk Pooling.
b. Intertemporal choice.
c. Revealed Preference approach: Strong and weak axioms of revealed preference – derivation of demand function.
d. Labour supply and savings decision - choice between leisure and consumption.

2. Market structure under Monopoly and Monopolistic Competition
a. Monopoly: Pricing with market power; price discrimination; peak-load pricing; two-part tariff; multi-plant monopolist, principles of regulations
b. Monopolistic competition: Product differentiation and demand curve; concept of product group; equilibrium of the firm; excess capacity and its interpretation

3. Input Markets
a. Labour and land markets - basic concepts of derived demand, productivity of an input, marginal productivity of labour and marginal revenue product.
b. Input demand curves; shifts in input demand curves.
c. Labour supply and savings decision - choice between leisure and consumption.

d. Competitive labour markets.
e. Labour markets and public policy.

Readings
1. Hal R. Varian, Intermediate Microeconomics, a Modern Approach, W.W. Norton and Company/Affiliated East-West Press (India), 8th edition, 2010. The workbook by Varian and Bergstrom may be used for problems.
2. C. Snyder and W. Nicholson, Fundamentals of Microeconomics, Cengage Learning (India), 2010.
3. B. Douglas Bernheim and Michael D. Whinston, Microeconomics, Tata McGraw-Hill (India), 2009.
4. Roberto Serrano & Allan M. Feldman, "A Short Course in Intermediate Microeconomics", Cambridge University Press, 2013.
5. Gravelle and Rees: Microeconomics, Pearson

ECON202C06: INTERMEDIATE MACROECONOMICS – I
Credit - 06 [Theory: 05; Tutorial: 01]
Contact hours per week: 06

Course Description

This course introduces the students to formal modelling of a macro-economy in terms of analytical tools. It discusses various alternative theories of output and employment determination in a closed economy in the short run as well as medium run, and the role of policy in this context.
Teaching methods will include lectures supported by tutorial.

1. Wage - Price Flexibility and Full Employment
Classical system - Say's law, saving and investment, Friedman's restatement of Quantity Theory of Money; Labour market, Determination of income, employment, wage and interest rate, Dichotomy between real sector and monetary sector - neutrality of money.

2. Aggregate Demand and Aggregate Supply Curves
Derivation of aggregate demand and aggregate and supply curves; interaction of aggregate demand and supply; Explanation of aggregate supply curve with and without price or wage rigidity - Imperfect information model - Worker misperception model; Solution of Complete Keynesian model; Comparative Statics.

3. Fiscal and Monetary Policy
Active or passive; monetary policy objectives and targets; rules versus discretion: time consistency; the government budget constraint; government debt and Ricardian equivalence.

4. Schools of Macroeconomic Thoughts
Keynes versus Classics; New-Classicals and New-Keynesians.

Readings
1. Dornbusch, R., Fischer, S. and Startz, R., Macroeconomics, McGraw Hill, 12th edition, 2014.
2. Mankiw, N.G., Macroeconomics, Worth Publishers, 7th edition, 2010.
3. Blanchard, O., Macroeconomics, Pearson Education, Inc., 5th edition, 2009.
4. Sheffrin, Steven M., Rational Expectations, Cambridge University Press, 2nd edition, 1996.
5. Abel, A. B. and Bernanke, B. S., Macroeconomics, Pearson Education, Inc., 7th edition, 2011.
6. Froyen, R.T. Macroeconomics, Pearson Education Asia, 2nd edition, 2005.
7. Chandana Ghosh and Ambar Ghosh, Macroeconomics, Second edition, EEE, 2021.

Semester 4

ECON251C07: INTERMEDIATE MICROECONOMICS – II
Credit - 06 [Theory: 05; Tutorial: 01]
Contact hours per week: 06

Course Description

This course is a sequel to Intermediate Microeconomics I. The emphasis will be on giving conceptual clarity to the student coupled with the use of mathematical tools and reasoning. It covers general equilibrium and welfare, imperfect markets and topics under information economics.

Teaching methods will include lectures supported by tutorial work.

1. Game theory and Oligopoly
a. Game theory: Definition, types – normal vs. extensive forms - Zero sum game - Dominance, iterative dominance, best response function, Nash equilibrium - Prisoner's dilemma - Pure vs. Mixed strategy, Repeated Games.
b. Simultaneous Quantity Setting - Cournot Equilibrium; Simultaneous Price Setting: Bertrand Equilibrium and Bertrand Paradox, Product differentiation in Bertrand model; Sequential game with perfect information - Quantity Leadership - Stackelberg Equilibrium; Implications of the Prisoners' dilemma for oligopolistic pricing - Price Rigidity – Price Signalling and Price Leadership; Collusion and Formation of Cartel; Cartel Instability; Threats – Commitments – Credibility and Cartel Stability.

2. General Equilibrium, Efficiency and Welfare
a. Equilibrium and efficiency under pure exchange and production.
b. Overall efficiency and welfare economics, Fundamental theorems of Welfare Economics, Lange-Lerner theorem, Second Best theorem.
c. Introduction to Social Choice: Bergson welfare function, Condorcet and agenda paradox, Strategic voting: Pliny's example, Arrow Impossibility theorem (assumptions and statement only).

3. Market Failures
a. Externalities and market inefficiency – Difference between social costs and private costs – Positive and negative externalities – Pigouvian tax and subsidies – Coase Theorem - Transaction costs.
b. Public Goods – Concepts of free/costly disposal and congestion externality - Private provisioning and market failure - Samuelson condition - Lindahl model - Preference revelation and empirical evidence on free riding – Club Goods – Common Property and Tragedy of the Commons.
c. Markets with Asymmetric Information - Adverse selection and the market for lemons - Moral hazard and Principal-Agent Problem - Signalling - Pooling vs separating equilibrium.

Readings
1. H. R. Varian, Intermediate Microeconomics, a Modern Approach, 8th edition, W.W. Norton and Company/Affiliated East-West Press (India), 2010.The workbook by Varian and Bergstrom could be used for problems.
2. C. Snyder and W. Nicholson, Fundamentals of Microeconomics, Cengage Learning (India).
3. J. M. Perloff: Microeconomics – Theory and Application with Calculus, Addison Wesley.
4. H. Gravelle and R. Rees: Microeconomics, Pearson.
5. C. E. Ferguson and J. P. Gould: Microeconomic Theory, The Irwin series in economics.
6. P. K. Dutta, Strategies and Games: Theories and Practice, MIT Press.
7. Aliprantis and Chakrabarti "Games and Decision Making" Second edn, 2012. Oxford University Press.
8. Cowell, F.A "Microeconomics - Principles and Analysis" Second edn, 2018. Oxford University Press.
9. Gareth Myles, Public Economics, Cambridge University Press, 2002.
10. Jean Hindriks and Gareth Myles, Intermediate Public Economics, MIT Press, 2006.

11. Jonathan Gruber, Public Finance and public policy, Worth Publishers, 2005.
12. A. Sullivan, S. Sheffrin and S. Perez, Economics, Pearson, 2018.

Advanced readings

1. Francis Bator (1960) "The simple analytics of welfare maximisation", Quarterly Journal of Economics, 47(1): 22-59.
2. Ronald Coase (1960) "The problem of social cost", Journal of Law and Economics, 3 (October): 1-44.
3. James Buchanan and William Stubblebine (1962) "Externality", Economica, 29(116): 371-384.
4. Robyn H. Dawes and Richard Thaler (1987) "Anomalies: Co-operation", The Journal of Economic Perspectives, 2(3): 187-197.
5. Gerald Marwell Ruth E. and Ames, Economists free ride, does anyone else? Experiments on the provision of public goods. Journal of Public Economics, 1981, 15(3): 259-310.

ECON252C08: INTERMEDIATE MACROECONOMICS – II
Credit - 06 [Theory: 05; Tutorial: 01]
Contact hours per week: 06

Course Description

This course is a sequel to Intermediate Macroeconomics I. In this course, the students are introduced to the long run dynamic issues like growth and technical progress. It introduces the students to various theoretical issues related to an open economy. It also provides the micro-foundations to the various aggregative concepts used in the previous course.

Teaching methods will include lectures supported by tutorial.

1. Microeconomic Foundations
a. Consumption: Keynesian consumption function and Empirical findings on consumption-income relationship; Theory of optimal intertemporal choice; life-cycle and permanent income hypotheses; rational expectations and random-walk of consumption expenditure.
b. Investment: Business fixed investment – neoclassical theory – Tobin's Q; Theory of inventory investment – acceleration principle
c. Demand for money - Keynesian theory of speculative demand for money, Tobin's theory of speculative demand for money, Baumol-Tobin model of transaction demand for money

2. Open Economy Models
Classical approach to open economy - role of the real exchange rate; Exchange rate determination; Short-run Keynesian approach - Mundell-Fleming model; purchasing power parity; asset market approach; Dornbusch's overshooting model; monetary approach to balance of payments; Effect of devaluation, tariff and export subsidy on output and trade balance; Macro policy in an open economy.

3. Inflation, Unemployment and Expectations
Phillips curve; adaptive and rational expectations; policy ineffectiveness debate.

4. Economic Growth
Harrod-Domar model and knife-edge instability; Neoclassical theory of growth - Solow model - golden rule, technological progress; Elements of endogenous growth.

Readings

1. Dornbusch, Fischer and Startz, Macroeconomics, McGraw Hill, 11th edition, 2010.
2. N. Gregory Mankiw. Macroeconomics, Worth Publishers, 7th edition, 2010.
3. Olivier Blanchard, Macroeconomics, Pearson Education, Inc., 5th edition, 2009.
4. Charles I. Jones, Introduction to Economic Growth, W.W. Norton & Company, 2nd edition, 2002.
5. R J Barrow and Xavier, Sala-i-Martin, Economic Growth, McGraw-Hill, 1995.

Semester 5

ECON301C09: STATISTICAL METHODS FOR ECONOMICS
Credit - 06 [Theory: 05; Tutorial: 01]
Contact hours per week: 06

Course Description

This is a course on statistical methods for economics. It begins with the notion of probability, followed by probability distributions of discrete and continuous random variables and of joint distributions. This is followed by a discussion on sampling techniques used to collect survey data. The course introduces the notion of sampling distributions that act as a bridge between probability theory and statistical inference. The semester concludes with some topics in statistical inference that include point and interval estimation.

Teaching methods will include lectures supported by tutorial.

1. Elementary Probability Theory
a. Sample spaces and events; probability axioms and properties; counting techniques; conditional probability and Bayes' rule; independence.
b. Limitations of the Classical definition, Frequency definition, Axiomatic Approach.

2. Random Variables and Probability Distributions
a. Defining random variables; probability distributions; expected values of random variables and of functions of random variables.
b. Properties of commonly used discrete and continuous distributions (uniform, binomial, Poisson, normal and exponential random variables).

3. Jointly Distributed Random Variables
Density and distribution functions for jointly distributed random variables; computing expected values; covariance and correlation coefficients.

4. Sampling
a. Principal steps in a sample survey; methods of sampling; the role of sampling theory.
b. Properties of random samples.

5. Point and Interval Estimation
a. Estimation of population parameters using methods of moments and maximum likelihood procedures; properties of estimators.
b. Derived distributions: Standard normal, chi-square, t- and F-distributions
c. Confidence intervals for population parameters.

6. Testing of Hypothesis
Framing the null and alternative hypothesis, p-values, Type-I and Type-II Errors, power of a test Simple applications of tests for the Mean and Variance of a univariate normal population and two independent normal populations

7. Non-parametric statistics*
Properties of Order Statistics, Nonparametric Statistical inference

Readings
1. Paul G. Hoel, Sidney C. Port, Charles J. Stone: Introduction to Probability Theory, Universal Book Store, Delhi
2. John E. Freund's Mathematical Statistics with Applications, Pearson, 2014.
3 G Casella and R L Berger, Statistical Inference, Duxbury Advanced Series, Cengage Learning, 2002
4. William G. Cochran, Sampling Techniques, John Wiley, 2007.
5. Mood, A.M., F.A. Graybill and D.C. Boes: Introduction to the theory of statistics, McGraw Hill
6. Goon, Gupta and Dasgupta, Fundamentals of Statistics, Volume 1, 2, World Press

7. Gibbons, J.D. and Chakraborti, S. Nonparametric Statistical Inference, 5th ed. CRC Press, 2011
8. Conover, W.J. Practical Nonparametric Statistics, 3rd Eds John Wiley and Sons, INC, 2006

ECON302C10: DEVELOPMENT ECONOMICS
Credit - 06 [Theory: 04; Practical: 02]
Contact hours per week: 08

Course Description

This is a compulsory course in development economics, designed for the third-year students of the four-year B.Sc. (Hons.) programme. The course will begin with a discussion on the alternative conceptions of development and their justifications and then proceed to briefly present economic development as the phenomenon of "convergence". Few classes will be devoted to present and discuss the global pattern of economic development and link it to the canonical growth models and their assumptions and predictions. The subsequent lectures will then move on to discuss the nature and causes of inefficiencies in the various markets in LDCs while touching upon the themes of market imperfections, asymmetric information, market failure, political equilibrium, state failures and institutional quality. The final module will address the issue of equity and distribution. This module will also engage the students with laboratory-based data analysis and report generation.

1. Development, Economic Development and Economic Growth

Alternative concepts & measures of development, documenting the international variation in these measures, comparing development trajectories across nations and within them. Correlating these with with economic growth performance patterns, based on predictions of the Harrod-Domar and the (augmented) Solow Models.

2. Production conditions in the LDCs: the issue of market inefficiency

The distribution of land ownership; land reform and its effects on productivity; contractual relationships between tenants and landlords; land acquisition; nutrition and labor productivity; informational problems and credit contracts; microfinance; inter-linkages between rural factor markets.

3. Poverty and Inequality: Definitions, Measures and Mechanisms

Inequality axioms; a comparison of commonly used inequality measures; connections between inequality and development; poverty measurement; characteristics of the poor; mechanisms that generate poverty traps and path dependence of growth processes.

4. Practical [Contact hours per week: 04]
Practical work will be tailored towards facilitating the learning objectives of Modules 1 and 3 via data analysis in the computer lab.

Readings
1. Debraj Ray, *Development Economics,* Oxford University Press, 2009.
2. Kaushik Basu, *Analytical Development Economics*, OUP, 1998
3. Abhijit Banerjee, Roland Benabou and Dilip Mookerjee, *Understanding Poverty,* UP, 2006.
4. Amartya Sen, *Development as Freedom,* OUP, 2000.
5. Martin Ravallion, *The Economics of Poverty: History, Measurement & Policy*, OUP, 2016
6. Branko Milanovich, *Global Inequality: A New Approach for the Age of Globalization*, Belknap Press, 2016
7. Abhijit V. Banerjee & Esther Duflo, *Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty*, Public Affairs, NY, 2011
8. Jonathan Haughton & Shahidur Khandker, *The Handbook on Poverty & Inequality*, The World Bank, 2009
9. Pranab Bardhan & Christopher Udry, *Development Microeconomics*, OUP, 1999.

ECON303C11: INDIAN ECONOMY
Credit - 06 [Theory: 05; Tutorial: 01]
Contact hours per week: 06

Course Description

This course reviews major trends in economic indicators and policy debates in India in the post-Independence period, with particular emphasis on paradigm shifts and turning points. It highlights major policy debates and evaluates the Indian empirical evidence. This course helps to critically assess the public policies and their impact in shaping trends in key economic indicators in India.

1. Macroeconomics of India

a. Growth, investment, savings, unemployment
b. Sector-wise growth profile and changes of its contribution in GDP, structural change in employment.
c. Fiscal Performance: receipts and expenditure; Deficits and its Financing, Public debt; fiscal reforms.
d. Inflations, Monetary Management and Financial Intermediation since independence

2. Sectoral Issues: Agriculture

Growth, inclusiveness and sustainability; Land, labour credit and output markets; input subsidy; State vis-à-vis market; farm income

3. Sectoral Issues: Industry

Labour intensive and capital-intensive industrialisation; Growth; total factor productivity; Labour laws and manufacturing sector; Public Private partnership Models, National industrial policy 2011 and reality check

4. Sectoral Issues: Service

Nature of services in India; Measuring services output: conceptual issues, Revealed comparative advantages of service sector and export of services

5. External Sector

a. Changing nature in composition and directions of exports and imports; foreign trade policies, Regional cooperations;
b. BoP developments; Foreign exchange reserves and Exchange rate,

6. Social sector

a. Estimates of poverty; recent controversy of poverty reduction; economic reforms and poverty in India; poverty alleviation policies
b. Income inequality; international comparison, measures to combat inequality in income.
c. Human Development in India; international comparison and regional perspectives; demographic dividend; missing women

Readings

1. Dreze, J. and Sen, Amartya, 2013. An Uncertain Glory: India and its Contradictions, Princeton University Press.
2. Balakrishnan P. and Pushpangadan K., 1994, Total Factor-Productivity Growth in Manufacturing Industry: A Fresh Look EPW Vol. 29, No. 31 (Jul. 30, 1994), pp. 2028-2035 3.
3. Mohan, Rakesh, 2008, Growth Record of Indian Economy: 1950-2008. A Story of Sustained Savings and Investment, Economic and Political Weekly, May.
4.Shetty, S.L., 2007, India's Savings Performance since the Advent of Planning, in K.L. Krishna and A. Vaidyanathan, editors, Institutions and Markets in India's Development.
5. Himanshu, 2010, Towards New Poverty Lines for India, Economic and Political Weekly, January.
6. Himanshu, 2011, Employment Trends in India: A Re-examination, Economic and Political Weekly, September.
7. Dreze, Jean and Reetika Khera, 2013, Rural poverty and the public distribution system, Economic & Political Weekly.
8. Khera, Reetika, 2011, India's Public Distribution System: Utilisation and Impact, Journal of Development Studies.

9. Basu, Kaushik, 2009, China and India: Idiosyncratic Paths to High Growth, Economic and Political Weekly, September.

10. Kapoor, Radhicka P. P. Krishnapriya, 2019, Explaining the contractualisation of India's workforce, Indian Council for Research on International Economic Relations, Working paper No.369.

11. Kaushik Basu and A. Maertens, eds, 2013, The New Oxford Companion to Economics, Oxford University Press.

12. Subramanian, A. and Felman, J, 2019, India's Great Slowdown: What Happened? What's the Way Out? CID, Harvard University, Working Paper No. 370 December 2019

13. Chatterjee, S. and Subramanian, A., 2020, India's Inward (Re)Turn: Is it Warranted? Will it Work? Ashoka Centre for Economic Policy, Policy Paper No. 1

14. Kumar, A., 2015, Macroeconomic Aspects of Goods and Services Tax, EPW, Vol. 50, No. 29

15. Dhar, B., 2015, India's New Foreign Trade Policy: Pluses and Minuses, EPW, Vol. 50, No. 16 pp. 14- 16 7. WTO, (2020) Trade Policy Review, Report by The Secretariat, India Ch.2

16. Mohan, R. and Ray, P, 2017, Indian Financial Sector: Structure, Trends and Turns, IMF Working paper

17. Mohan, R. and Ray, P., 2018, Indian Monetary Policy in the Time of Inflation Targeting and Demonetization, Asian Economic Policy Review (2018) 14, 1–26

18. Bhagwati, J. and Panagariya, A., 2012, A Multitude of Labour Laws and Their Reform in India's Tryst with Destiny, Harper Business, Ch 8

19. Chakraborty, A., 2016, Reforming Labour Markets in States: Revisiting the Futility Thesis, EPW, Vol. 50, No. 20

20. Chetan Ghate (Ed), 2012, The Oxford Handbook of the Indian Economy, OUP, 2012 15. Economic Survey (Latest)

21. Dev, S. Mahendra, 2018, Transformation of Indian Agriculture? Growth, Inclusiveness and Sustainability, IGIDR, Mumbai, WP-2018-026

22. Chand, R., 2017, Doubling Farmers' Income; Rationale, Strategy, Prospects and Action Plans, NITI Policy Paper 1/2017

23 Gulati, A. and Saini, S., 2017, 25 years of Policy Tinkering in Agriculture in Rakesh Mohan (ed) India Transformed, Penguin

24. Government of India, 2015, What to Make in India? Manufacturing or Service? Economic Survey 2014-15, Ch 7

25. Kumar, N., 2014, FDI and Portfolio Investment Flows and Development: A Perspective on Indian Experience in Uma Kapila (ed) Indian Economy since independence 2015-16 Academic Foundation Delhi

26. Thomas, J. J., 2018, Economic growth without employment The story of Indian manufacturing in Hill and Patil (eds) Employment Policy in emerging economies, Routledge, London and New York

27. Rupa, C., 2017, Services for Indian Manufacturing in Mahendra Deb, S.(ed) India Development Report, 2017

28. Bhide, Shashanka, V.N. Balasubramanyam and K.L. Krishna, 2021, Deciphering India's Services Sector Growth, Taylor and Francis, Ch 2, 4, 5 6 7 and 11

29. Kujur, S.K. and Diti Goswami, 2021, National Manufacturing Policy A Reality Check, EPW,Vol. 56, Issue No. 45-46, 06 Nov, 2021

Semester 6

ECON351C12: ECONOMETRICS I
Credit - 06 [Theory: 04; Practical (Computer Lab): 02]
Contact hours: 8 hours per week

Course Description

This course provides a comprehensive introduction to basic econometric concepts and techniques. It covers statistical concepts of hypothesis testing, estimation and diagnostic testing of simple regression models. It also introduces the k-variable regression model.

Teaching methods will include lectures supported by tutorial and practicum.

1. Nature and scope of Econometrics
What is Econometrics? Economic and Econometric Models; The aims and methodology of Econometrics

2. Simple Linear Regression Model: Specification and estimation
a. Assumptions and specification of the two variable regression model; deriving the Ordinary Least Squares (OLS) Estimates; properties of estimators - Gauss Markov Theorem; estimation of the error variance; Analysis of variance (ANOVA); goodness of fit.
b. Reverse Regression
c. Statistical inference in the linear regression model – confidence intervals for the estimated parameters and the testing of hypotheses
d. Prediction with the Simple Regression model
e. Introduction to large sample

3. Alternative estimation techniques
Estimation of parameters using Maximum Likelihood Estimation technique

4. Introduction to k-variable regression model
a. Elements of matrix algebra
b. Assumptions and specification of the model; Estimation of parameters
c. Concepts of multiple, partial and simple correlation

5. Regression diagnostics in a two-variable framework
a. Extreme values and its detection
b. Heteroscedasticity
c. Autocorrelation

6. Qualitative variables
Introducing qualitative (dummy) independent variables – additive and multiplicative dummy variables – notion of dummy variable trap

Readings
1. Stock and Watson, Introduction to Econometrics, Pearson.
2. Woolridge, J. M: Econometrics, CENGAGE
3. Johnston and Dinardo, Econometric methods, McGraw Hill

7. Practical [Contact hours per week: 04]
Applications using STATA/R

Readings:
1. U. Kohler & F. Kreuter Data analysis using Stata, Stata Press
2. Lawrence Hamilton (2013) Statistics with Stata: updated for version 12, Brooks, Cole.
3. Lee C. Adkins and Carter Hill (2011) Using Stata with Principles of Econometrics, John Wiley & Sons: New York.

ECON352C13: ECONOMETRICS II
Credit: 6 [Theory: 04; Practical: 02]
Contact hours: 8 hours per week

Course Description

This course introduces the senior UG students to the modern econometric time series and panel data analysis using univariate and multivariate data. The course train the students to model univariate time series for forecasting and for evaluating the impulse response. It covers the sources of non-stationarity and its remedies, cointegration and error correction models. An introduction to the modelling volatility has also been covered in this course. The course ends with a detailed analysis of static panel data models. In lab part, using real life data with STATA the empirics and interpretations of these econometric models will be analysed.

Teaching methods will include lectures supported by tutorial and practicum.

1. Stationary Time Series Models
a. Stochastic Time Series: Stationarity and Invertibility --ARMA models- Autocorrelation function- Partial Autocorrelation Function-Impulse responses
b. Box-Jenkins Methodology: Model Selection-Identification- Estimation - Diagnostic testing - Forecasting; Properties of Forecasting
c. Parameter instability and Structural Change

2. Time Series Models with Trend
a. Deterministic and Stochastic Trend - Random Walk Model
b. Tests of Unit Root-Unit Root test in Presence of Structural Change
c. Trends and Univariate decompositions*

3. Modelling Non-stationary Time Series
Co-integration and Error Correction Models –Testing for Co-integration

4. Basics of Modelling Volatility (optional)
ARCH and GARCH models - Properties and Estimation ARCH –M Model

5. Static Panel Data Models
Pooled vs. Panel Data; Fixed Effect vs. Random Effect Models

Readings
1. Stock, J.H and Watson, M.W.: Introduction to Econometrics 3rd Eds, Pearson
2. Chatfield, C.: The Analysis of Time Series: An Introduction, 6th Eds Chapman & Hall/CRC
3. Enders, W.: Applied Econometric Time Series, 4th Eds, John Wiley and Sons
4. Granger, C.W.G. and Newbold, P.: Forecasting Economic Time Series
5. Johnston, J and Dinardo, J. Econometric Methods 4th Eds, Mc Graw-Hill
6 Greene, W.H. Econometric Analysis, Prentice Hall.
7. Hsiao, C. Analysis of Panel Data, Cambridge University Press.

6. Practical [Contact hours per week: 04]
   Applications using STATA/R

Readings:
Lee C. Adkins and Carter Hill (2011) Using Stata with Principles of Econometrics, John Wiley & Sons: New York.

ECON353C14: INTERNATIONAL ECONOMICS
Credit - 06 [Theory: 05; Tutorial: 01]
Contact hours per week: 06

Course Description

This course develops a systematic exposition of models that try to explain the composition, direction, and consequences of international trade, and the determinants and effects of trade policy. It concludes with an analytical account of the causes and consequences of the rapid expansion of international financial flows in recent years. Although the course is based on abstract theoretical models, students will also be exposed to real-world examples and case studies.

1. Introduction

a. What is international economics about? An overview of world trade.

b. Basis for and Gains from trade - Arbitrage and basis of trade; Comparative (price) advantage; different sources of Comparative Advantage; Absolute versus comparative Advantage; Gains from Trade - Trade as a positive-sum game - Gains from Trade theorem, illustration and its meaning; GFT theorem and Pareto optimality; Decomposition of GFT; substitution possibilities in production and consumption and magnitudes of GFT; Necessary and sufficient conditions of GFT: Tangency and convexity conditions

c. International Equilibrium - Offer curve under increasing opportunity costs: Derivation and Elasticity; International Equilibrium and determination of terms of trade; Offer curve under constant opportunity cost and distribution of GFT between large and small countries; Stability of International Equilibrium: Marshall-Lerner Condition

2. Theories of International Trade

a. Ricardian Model of Trade - Doctrine of Comparative Cost Advantage and GFT; One-factor economy: Production Possibility Frontier, Relative demand and supply, Autarkic terms of trade; Trade in Ricardian model: Technology as basis of trade; complete specialization; Large and small countries revisited; Extensions of Ricardian model: many commodity, many country.

b. Factor Abundance, Trade and Income Distribution - Two factor economy: Factor abundance, factor intensity reversal; Relation between factor endowment and output (Rybczynski Effect or the supply shift); Heckscher-Ohlin theorem: Factor abundance as basis for international trade; Relation between Commodity Price and Factor-Price (One-to-one correspondence); Factor Price Equalization theorem and its sources of disruptions (complete specialization; factor intensity reversal; factor immobility; non-traded good); Effect of trade on income distribution (price magnification effect); Leontief Paradox: Testing the model empirically.

c. Specific Factor Model - Specific Factor Model: Commodity Price, Factor Price, Factor Allocation; maintaining full employment under flexible-coefficient production; Alternative interpretation: Specific Factor model as "short run" Heckscher-Ohlin model; Relative price change and Income Distribution

3. Trade Policy
Partial equilibrium analysis of tariff; tariff and quota, tariff-quota equivalence (under perfect competition and monopoly), effective rate of protection; general equilibrium analysis: tariff in small and large country, optimum tariff, Metzler's paradox; tariff and income distribution; wage gap debate; tariff and alternative policy measures for special objectives, infant industry argument for protection; domestic distortion and policy interventions; other trade and non-trade barriers (concepts only) - VER; environmental regulations as non-tariff barriers

4. Effect of Growth on Trade
Factor growth and production possibility; trade and growth induced by technical progress; Growth, terms-of-trade and welfare

5. International Macroeconomic Policy
Fixed versus flexible exchange rates; international monetary systems; financial globalization and financial crises.

Readings:
1. Krugman, P., Obstfeld, M. and Melitz, M., International Economics: Theory and Policy, Addison-Wesley (Pearson Education Indian Edition), 9th edition, 2012.
2. Dominick Salvatore, International Economics: Trade and Finance, John Wiley International Student Edition, 10th edition, 2011.
3. Caves, R.E., Frankel, J.A., and Jones, R.W., World trade and payments: An introduction, Pearson Education, 10th edition, 2007
4. Heller, H R., International Trade; Theory and Empirical Evidence, Prentice Hall, 1968.
5. Bhagwati, J.N., Panagariya, A. and Srinivasan, T.N. Lectures on International Trade.MIT Press, 2nd edition, 1998.

ECON354C15: PUBLIC ECONOMICS
Credit - 06 [Theory: 05; Tutorial: 01]
Contact hours per week: 06

Course Description

Public economics is the study of government policy from the points of view of economic efficiency and equity. The paper deals with the nature of government intervention and its implications for allocation, distribution and stabilization. Inherently, this study involves a formal analysis of government taxation and expenditures. The subject encompasses a host of topics including public goods, market failures and externalities. The paper includes both the theory of public economics and the Indian public finances.

1. Premise for the Public Sector
a. Musgrave's three branches: allocation, distribution, stabilization
b. Public goods (social wants) provisioning - The problem of preference revelation:
(i) The voting route: Majority voting and the Juror's theorem, Condorcet paradox, Arrow's Impossibility Theorem, Single-peaked preferences, Median voter, Inefficiency of majority voting equilibrium.
(ii) The tax route: The Benefit Approach to taxation and expenditure, Lindahl model & Pareto efficiency, preference revelation mechanism revisited.

2. Principles of Taxation and Welfare Implication
a. Incidence of taxation
b. Economic efficiency, optimal taxation
c. Administrative simplicity, Flexibility, political responsibility
d. Fairness: The Benefit Approach, Ability-to-pay Approach (horizontal and vertical equity).

3. Public Finance in India
a. Tax System: structure and reforms
b. Budget items and different concepts of deficits and surpluses; public debt; Indian Central and State budgets in practice
c. Principles of fiscal federalism with reference to India

Readings
1. J. Hindriks, G. Myles: Intermediate Public Economics, MIT Press, 2006.
2. H. Rosen, T. Gayer: Public Finance, 9th ed., McGraw-Hill/Irwin, 2009.
3. Joseph E. Stiglitz, Economics of the Public Sector, W.W. Norton & Company, 3rd edition, 2000.
4. R.A. Musgrave and P.B. Musgrave, Public Finance in Theory & Practice, McGraw Hill Publications, 5th edition, 1989.
5. Bagchi, Amaresh (ed) Readings in Public Finance, OUP.
6. Report of the Finance Commission (Latest).
7. Economic Survey, Government of India (Latest).
8. A. Ghosh and C. Ghosh: Public Finance, PHI Learning, 2014

Semester 7

ECON401C16: ECONOMETRICS III
Credit - 04 [Theory: 03; Practical (Computer Lab): 01]
Contact hours: 5 hours per week

Course Description

This course covers statistical concepts of hypothesis testing, estimation and diagnostic testing of multiple regression models. The course also covers the consequences of and tests for misspecification of regression models and qualitative dependent variable models.

Teaching methods will include lectures supported by tutorial and practicum.

1. Multiple Linear Regression Model
a. Assumptions, estimation of parameters; properties of OLS estimators
b. R^2 and adjusted R^2; goodness of fit; partial regression coefficients
c. Testing hypotheses – individual and joint
d. Wald test, Lagrange Multiplier (LM) test and Likelihood Ratio (LR) Test

2. Regression diagnostics
a. Addressing heteroscedasticity and autocorrelation using Generalised Least Square (GLS) technique
b. Multicollinearity – definition and consequences, detection and remedial techniques including Principal Component Analysis (PCA)
c. Misspecification; different functional forms; model selection
d. Omission of a relevant variable; inclusion of irrelevant variable; tests of specification errors

3. Dummy dependent variable model
a. Linear probability model – Logit and probit
b. Truncated and tobit models

Readings
1. Stock and Watson, *Introduction to Econometrics*, Pearson.
2. Woolridge, J. M: *Econometrics*, CENGAGE
3. Johnston and Dinardo, *Econometric methods*, McGraw Hill

4. Practical [Contact hours per week: 02]
 Applications using STATA/R

Readings:
1. U. Kohler & F. Kreuter *Data analysis using Stata*, Stata Press
2. Lawrence Hamilton (2013) *Statistics with Stata: updated for version 12*, Brooks, Cole.
3. Lee C. Adkins and Carter Hill (2011) *Using Stata with Principles of Econometrics*, John Wiley & Sons: New York.
4. J. Scott Long and Jeremy Freese (2014) Regression models for categorical dependent variables using Stata, 3rd ed., Stata Press: Texas.

ECON402C17: CAUSAL INFERENCE AND IMPACT EVALUATION
Credit - 04 [Theory: 03; Practical (Computer Lab): 01]
Contact hours per week: 05

Course Description

This course introduces would be researchers to the problems of making causal inferences in research, particularly when analysing the impact of shocks and programmes. The course starts with an introduction to the limitations of using the OLS in making causal inferences. It then discusses the different methods applied in observational data collected in cross-sectional and panel settings to estimate treatment effects. In addition to theory, case studies of applications of these methods and hands on training using Stata will be applied.

Teaching methods will include lectures supported by tutorial and practicum.

1. Introduction to causal inference
a. Basic concepts and introduction to treatment effects
b. Endogeneity: causes, problems
c. Missing counterfactual, self-selection and confounding problems
d. Randomised controlled trials and its limitations

2. Instrumental variable method
a. Instrumentation: Instrument variable, GMM and 2SLS, Properties of instrument variable
b. Binary dependent variable: control function approach
c. Case studies

3. Addressing self-selection
a. Heckman selection model
b. Difference in Difference and its limitations
c. Case studies

4. Confounding variables
a. Matching methods: Propensity score and nearest neighbour
b. Combining matching with control function approach
c. Case studies

5. Quantile regressions (optional)
a. Limitations of OLS
b. Quantile regressions: Quantiles, concept of check function, Quantile coefficients as a LPP solution
c. Case studies

Readings:
1. Gertler, Paul (2016) Impact evaluation in practice, second edition. The World Bank: Washington DC. Available from https://tinyurl.com/ypnmsw86.
2. Khandker, S. R., Koolwal, G. B. and Samad, H. A. (2010) Handbook on Impact Evaluation: Quantitative Methods and Practices. The World Bank: Washington DC. Available from https://tinyurl.com/2f73kcfs.
3. J.M. Woolridge (2002) Econometric analysis of cross section and panel data, MIT Press, Cambridge, Mass.

Advanced material:
1. Barrett, C. B. and Carter, M. R. (2010) "The Power and Pitfalls of Experiments in Development Economics: Some Non-random Reflections", Applied Economic Perspectives and Policy, 32(4): 515–548.
2. Bernal, J. L., Cummins, S. and Gasparrini, A. (2017) "Interrupted time series regression for the evaluation of public health interventions: a tutorial", International Journal of Epidemiology, 348-355.
3. Cameron A. Colin and Pravin K. Trivedi: Microeconometrics: Methods and Applications, Cambridge University Press.
4. Deaton, A. and N. Cartwright (2018) "Understanding and misunderstanding randomized controlled

trials", Social Science and Medicine, 219: 2-21.
5. Greene, W.H. (2002) Econometric Analysis, Prentice Hall.
6. Kreider, B. and Pepper, J. V. (2007) "Disability and Employment", Journal of the American Statistical Association, 102(478), 432-441.
7. Kreider, B., Pepper, J.V., Gundersen, C and Jolliffe, D. (2012) "Identifying the effects of SNAP (Food Stamps) on child health outcomes when participation is endogenous and misreported", Journal of the American Statistical Association, 107(499): 958-975.
8. Koenker, Roger (2006) Quantile regression in R: A vignette.
9. Koenker, Roger and Kevin Hollock (2001) Quantile regression, Journal of Economic Perspectives. 15(4): 143-156.
10. Koenker, Roger (2005) Quantile regression, in Fienberg and Kaden (ed) International Encyclopaedia of Social Sciences.
11. Manski, C. (2013) Public policy in an uncertain world: analysis and decisions. Harvard University Press: Cambridge MA.
12. Morgan, S.L. and Winship, C. (2010) Counterfactuals and Causal Inference Methods and Principles for Social Research. Cambridge University Press: New York. (Chapters 1, 2, 6 and 7).
13. Ravallion, M. (2009) "Should the Randomistas Rule?", The Economists Voice, 6(2): 6-6.
14. Ravallion, M. (2018) "Should the Randomistas (Continue to) Rule?" CGD Working Paper 492. Washington, DC: Center for Global Development. Available from https://tinyurl.com/yckjkecc.
15. Rodrik, Dani (2008) "The New Development Economics: We shall experiment, but how shall we learn?" Brookings Global Economy and Development Conference. May.
16. Sacerdote , Bruce (2001) "Peer Effects with Random Assignment: Results for Dartmouth Roommates", The Quarterly Journal of Economics, 116(2, May): 681–704.

6. Practical [Contact hours per week: 02]
Implementation of methods covered using STATA/R

Readings
StataCorp (2021) Stata version 17: Manual. Stata Press: Texas.

ECON403C18: FINANCIAL ECONOMICS
Credit - 04 [Theory: 03, Practical (Computer Lab): 01]
Contact hours per week: 05

Course Description

This course introduces students to the economics of finance. Some of the basic models used to benchmark valuation of assets and derivatives are studied; these include the CAPM, and the Binomial Option Pricing models. The course ends with a brief introduction to corporate finance. The theoretical learning is supplemented by some relevant practical application

1. Investment Theory and Portfolio Analysis

a. Deterministic cash-flow streams; discounting and present value; internal rate of return; evaluation criteria; fixed-income securities; bond prices and yields; interest rate sensitivity and duration; immunisation; the term structure of interest rates; yield curves; spot rates and forward rates.
Single-period random cash flows

b. Random asset returns; portfolios of assets; portfolio mean and variance; feasible combinations of mean and variance; mean-variance portfolio analysis: Markowitz model and the two-fund theorem; risk-free assets and the one-fund theorem.

c. CAPM - The capital market line; the capital asset pricing model; the beta of an asset and of a portfolio; security market line; use of the CAPM model in investment analysis and as a pricing formula.

2. Options and Derivatives

Introduction to derivatives and options; forward and futures contracts; options; other derivatives;

forward and future prices; stock index futures; interest rate futures; the use of futures for hedging; duration-based hedging strategies; option markets; call and put options; factors affecting option prices; put-call parity; Introduction to option trading strategies: spreads; straddles; strips and straps; strangles; the principle of arbitrage; discrete processes and the binomial tree model; risk-neutral valuation.

3. Corporate Finance

Patterns of corporate financing: common stock; debt; preferences; convertibles; Capital structure and the cost of capital; corporate debt and dividend policy; the Modigliani- Miller theorem and its modifications.

Readings

1. Luenberger, David G. Investment Science, Oxford University Press, USA, 1997.
2. Hull, John C., Options, Futures and Other Derivatives, Pearson Education, 6th edition, 2005.
3. Copeland, T.E., Weston, J.F. and Shastri,K. Financial Theory and Corporate Policy, Prentice Hall, 4th edition, 2003.
4. Brealey, R.A., Myers, S.C., and Allen, F., Principles of Corporate Finance, McGraw-Hill, 12th edition, 2017.
5. Ross, S.A., Westerfield, R.W. and Jordan, B.D. Fundamentals of Corporate Finance. McGraw-Hill, 7th edition, 2005.
6. Malkiel, B.G. A Random Walk Down Wall Street, W.W. Norton & Company, 2003.
Sharpe, W., Alexander, G. and Bailey, J. Investments, Prentice Hall of India, 6th edition, 2003.

4. Practical [Contact hours per week: 02]

Applications related to theories of corporate finance, international finance and financial markets using MS-Excel and Eviews with data from bseindia.com; nseindia.com, moneycontrol.com, rbi.org.in and other relevant database - Evaluation of bonds and stocks, financial statement analysis, estimation of market models, construction of portfolio and performance analysis, applications in derivative market

Readings

1. Brooks, C., Econometrics for Finance, Oxford University Press, 2002

ECON441C19: PROJECT/ DISSERTATION
Credit – 04 (Sessional)

Course Description

Students will do a four-credit theoretical/empirical term-paper that will be further developed in the eighth semester.

Semester 8

ECON451C20: GAME THEORY AND INFORMATION ECONOMICS
Credit - 04 [Theory: 03; Tutorial: 01]
Contact hours per week: 04

Course Description

This course deals with repeated games and games with complete and incomplete information. Ideas related to complete as well as asymmetric information among the interacting economic agents would be the main focus of this course. Students learn the concept of Bayesian and Perfect Bayesian equilibrium. The course ends with the application of game theory to analyse moral hazard, adverse selection and signaling problems.

1. Review of Extensive form Games with Perfect Information
The game tree; strategies; subgame perfection; backward induction in finite games; commitment; bargaining; other applications

2. Repeated Games
Finitely repeated games and backward induction; infinitely repeated games; history dependent strategies; one-step deviation property; the repeated Prisoners' dilemma; idea of folk theorem.

3. Simultaneous move games with incomplete information (Bayesian games)
Strategies; Bayesian Nash equilibrium; auctions; other applications.

4. Extensive form games with imperfect information
Strategies; beliefs and sequential equilibrium; applications

5. Information economics
Adverse selection; moral hazard; signalling games

6. Bargaining
Bargaining as an extensive game, Axiomatic approach due to Nash, Relation between strategic and axiomatic approaches, illustrations.

Readings
1. Martin J. Osborne, An Introduction to Game Theory, Oxford University Press, New Delhi, 2004.
2. Hugh Gravelle and Ray Rees, Microeconomics, Pearson Education, 3rd edition, 2004.
3. Robert Gibbons, Game Theory for Applied Economists, Princeton University Press, 1992.
4. Prajit Dutta, Strategies and Games - Theory and Practice, MIT Press, 1999
5. S. Tadelis, Game theory: An introduction, Princeton University Press.

ECON452C21: RESOURCE AND ENVIRONMENTAL ECONOMICS
Credit - 04 [Theory: 03; Tutorial: 01]
Contact hours per week: 04

Course Description

This course introduces students to the principles and concepts of natural resource and environmental economics. The course will cover topics such as the economics of non-renewable and renewable resources, environmental externalities, pollution control, and sustainable development. The course will also explore the role of government in environmental policy-making and the use of economic instruments for environmental management.

1. Optimal exploitation of natural resources
a. Review of Optimal Control Theory
b. Natural resource: Types and classification
c. Non-renewable resource: Hotelling's rule and discounting over time
d. Principles of renewable resource management—Selected examples from biodiversity loss, fisheries, forests and water.

e. Common property, open access and property rights

2. Theory of environmental externalities
a. Theory of externalities: Pollution as externality
b. Economic theory of efficient pollution control: Regulatory instruments and strategies to control pollution—Tax, Standard and Marketable permits—Property rights
c. Trans-boundary pollution: Distinctive features of trans-boundary pollution—Climate change and Planetary boundary conditions—Institutional response—Pollution Haven hypothesis

3. Valuing the environment
a. Valuing the environment: Total economic value—Overview of valuation techniques
b. Economic Benefit-Cost analysis: principles—Incorporating environment into the exercise—Discounting

4. Changing perspectives on the environment
a. An ecological perspective: Environment as natural capital—Issue of macroeconomic scale—Economy and the environment.
b. Sustainable Development: Club of Rome Report—Entropy Laws—Economics of the coming spaceship earth—Daly's steady state growth—Growth versus Environment: Environmental Kuznets' curve—Brundtland Commission Report.

Readings

1. Roger Perman, Yue Ma, James McGilvray and Michael Common, Natural Resource and Environmental Economics, Pearson Education/Addison Wesley, 3rd edition, 2003.J.
2. B. Field and M. Field (2013) Environmental Economics, 6/e, The Mcgraw-Hill.
3. D. Pearce, R.K. Turner and I. Bateman (1993) Environmental Economics—An elementary introduction, John Hopkins Press.
4. Kolstad C.D. (2011): Intermediate Environmental Economics, OUP
5. Robert N. Stavins (ed.), Economics of the Environment: Selected Readings, W.W.Norton, 5th Ed, 2005.
6. Harris and B. Roach (2013) Environmental and Resource Economics—A contemporary approach, 3/e, Routledge.
7. Maureen L. Cropper and Wallace E. Oates, 1992, ―Environmental Economics: A Survey, Journal of Economic Literature, Volume 30:675-740.

ECON453C22: ECONOMICS OF GROWTH
Credit - 04 [Theory: 03; Tutorial: 01]
Contact hours per week: 04

Course Description

This course is designed for the advanced undergraduate students in their final semester of the 4-year undergraduate B.Sc. (Hons.) programme. The objective of this course is to introduce the modern developments in the literature on economic growth, at an appropriately technical level. While the initial modules will attempt explaining empirical patterns and motivate the theoretical models towards explaining them, some additional modules will also address the questions of income distribution, environmental impact, institutional quality, macroeconomic management, international trade, etc.

1. Neoclassical Growth Models: Technology, Population, Human Capital, Convergence
2. Endogenous Growth: Variants of the AK Model
3. The Romerian Model: Product Variety
4. The Schumpeterian Model: Economics of Ideas and Innovation
5. Growth Accounting, Growth Policies
6. Institutions, History, Geography, Distribution

Readings

1. Philippe Aghion & Peter Howitt, The Economics of Growth, The MIT Press, 2009.
2. Charles I. Jones, Dietrich Vollrath, Introduction to Economic Growth, WW Norton & Company, 2013.
3. Daron Acemoglu, Introduction to Modern Economic Growth, Princeton University Press, 2009.
4. Jérôme Adda & Russell W. Cooper, Dynamic Economics: Quantitative Methods & Applications, The MIT Press, 2003.
5. Robert J. Barro & Xavier Sala-i-Martin, Economic Growth, The MIT Press, 2004.
6. David N. Weil, Economic Growth, 3rd international edition, Pearson Learning, 2013.
7. Gérard Roland, Development Economics, Routledge, 2016.
8. Philippe Aghion & Jeffrey G. Williamson, Growth, Inequality, & Globalization: Theory, History, & Policy, Cambridge University Press, 1998.
9. Alpha C. Chiang, Elements of Dynamic Optimization, McGraw Hill Higher Education, 1992.
10. William R. Easterly, *The Elusive Quest for Growth: Economists' Adventures and Misadventures in the Tropics*, The MIT Press, 2002.
11. Daron Acemoglu and James A. Robinson, *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*, Crown Publishing, NY, 2012
12. Saha, B. (2013). Institutions or Geography: Which Matters Most for Economic Development? Journal of Interdisciplinary Economics, 25(1–2), 69–89. https://doi.org/10.1177/0260107914524668

ECON491C23: PROJECT/ DISSERTATION
Credit - 08

Course Description

Students will do an eight-credit theoretical/empirical dissertation-paper as group project

Description of Skill Enhancement Courses

Semester 3

ECON241SEC01: DATA ANALYSIS WITH R
Credit – 4 (Sessional)
Contact hours per week – 4

Course Description

This course is an introduction to data analysis using R, an open-source programming language for statistical computing and graphics. It aims to provide a comprehensive introduction to R and descriptive statistics. Participants will gain hands-on experience working with publicly available real-world data and will develop the skills necessary to manipulate, visualize, and analyze data using R software.

1. Introduction to R and RStudio
a. Installation and setup of R and RStudio
b. Basic R syntax and data types
c. RStudio features and interface
d. Introduction to the R help system

2. Data Curation
a. Introduction to data curation with the dplyr package
b. Subsetting data, filtering data, and summarizing data
c. Working with data in R using pipes

3. Data Visualization
a. Introduction to data visualization with the ggplot2 package
b. Basic plot types, aesthetics, and layers
c. Customizing plots and incorporating data summaries

4. Descriptive Statistics with R
a. Univariate Data: Measures of Central Tendency: mean, median, mode, Trim mean, geometric mean, harmonic mean, Measures of Dispersion: Range, quartile deviation, SD, CV, Moments and Order statistics: skewness, kurtosis, rank and percentile.
b. Multivariate Data: Covariance and correlation matrix, rank correlation.
c. Data analysis using R functions

Readings
1. Adler, J. 2012 "R in A Nutshell", O'Reilly Media Inc., 2ed.6.
2. Wickham and Grolemund 2017 "R for Data Science"
3. Grolemund, G. 2014 "Hands-On Programming with R", O'Reilly Media Inc.7.
4. Hilfiger, J. 2016 "Graphing Data with R", O'Reilly Media Inc.

Semester 4

ECON291SEC02: WORKING WITH DATA
Credit – 5 (Sessional)
Contact hours per week – 5

Course Description
This course is designed to provide students with an introduction to data analysis using the STATA software, with a focus on official data from India. The course covers the basic principles of data analysis, including data management and descriptive statistics. Students will also learn how to write project reports while working with publicly available real data and present them in a clear and concise manner using referencing software.

1. Official Statistics in India
Understanding official statistics; Types of official statistics; Role of official statistics in India, Census of India; National Sample Survey (NSS); Annual Survey of Industries (ASI); Consumer Price Index (CPI); NFHS, IHDS.

2. Data Management with STATA
Introduction to STATA; Data importing and exporting; Data management and cleaning; Creating graphs and tables; Merging datasets; Working with missing data

3. Guidance for Project Writing
Identifying the topic; Review of Literature; Writing Project Report – Referencing Styles and use of referencing software

4. Project and Presentation
Students will work on a project using publicly available real economic data and present their findings to the class.

Readings
1. "A Gentle Introduction to Stata" by Alan C. Acock
2. Reserve Bank of India – Handbook of Statistics on Indian Economy
3. Booth , W.C., Colomb, G.G. and Williams, J. M., The Craft of Research, 3rd edition, University of Chicago Press.
4. Mendeley Reference Manager https://www.mendeley.com/guides/mendeley-reference-manager/

Description of Minor Courses in Economics

Semester – 1

ECON104MC01: INTRODUCTORY MICROECONOMICS
Credit - 06 [Theory: 05; Tutorial: 01]
Contact hours per week: 06

Course Description

This course is designed to expose the students to the basic principles of microeconomic theory. The emphasis will be on thinking like an economist and the course will illustrate how microeconomic concepts can be applied to analyse real-life situations.

1. Exploring the subject matter of Economics

Why study economics? Scope and method of microeconomics - reading and working with graphs.
The economic problem: Scarcity and choice - production possibility curve – trade off, opportunity cost and decision making; incentives and information – prices (absolute and relative prices) property rights and profits.
Decision takers- households, firms and central authorities; choice by command and choice by market.
Alternatives to the price system – Rationing by Queues, Rationing by Lotteries, Rationing by Coupons.
Economic Systems

2. Supply and Demand: How Markets Work, Markets and Welfare

a. Elementary theory of demand – determinants of household demand and market demand, and shifts in the demand curves
b. Elementary theory of supply - factors influencing supply, derivation of the supply curve, and shifts in the supply curve
c. Determination of equilibrium price in a competitive market - Existence, Uniqueness and Stability of equilibrium (the Walrasian approach and Marshallian approach).
d. Prices and resource allocation
e. Elasticity and its application
f. Government Interventions and their Effects on market equilibrium – price ceiling, price floor and commodity taxation.
g. Consumer surplus, producer surplus and the efficiency of the markets.

3. The Households

a. The consumption decision – description of preferences (representing preferences with indifference curves) - properties of indifference curves; budget constraint; optimum choice.
b. Comparative statics: income and price changes – derivation of price consumption curve, income consumption curve and Engel's curve; demand for all other goods and price changes.
c. Substitution and income effects and law of demand – concepts of Marshallian and compensated demand curves
d. Labour supply and savings decision - choice between leisure and consumption.

4. The Firm and Perfect Market Structure

a. Defining a firm- firm's legal forms; profit maximization hypothesis
b. Behaviour of profit maximizing firms and the production process.
c. Short run costs and output decisions.
d. Costs and output in the long run.

5. Imperfect Market Structure

a. Monopoly and antitrust policy; government policies towards competition.
b. Concepts of different forms of imperfect competition.

6. Input Markets

a. Labour and land markets - basic concepts of derived demand, productivity of an input, marginal

productivity of labour and marginal revenue product.
b. Input demand curves; shifts in input demand curves.
c. Competitive labour markets.
d. Labour markets and public policy.

Readings

1.Joseph E. Stiglitz and Carl E. Walsh, Economics, W.W. Norton & Company, Inc., New York, International Student Edition, 4th Edition, 2007.
2. N. Gregory Mankiw, Economics: Principles and Applications, India edition by South Western, a part of Cengage Learning, Cengage Learning India Private Limited, 4th edition, 2007.
3. Karl E. Case and Ray C. Fair, Principles of Economics, Pearson Education Inc., 8th Edition, 2007.

Semester – 2

ECON154MC02: INTRODUCTORY MACROECONOMICS
Credit - 06 [Theory: 05; Tutorial: 01]
Contact hours per week: 06

Course Description

This course aims to introduce the students to the basic concepts of Macroeconomics. Macroeconomics deals with the aggregate economy. This course discusses the preliminary concepts associated with the determination and measurement of aggregate macroeconomic variables like savings, investment, GDP, money, inflation, and monetary and fiscal policies.

1. Introduction to Macroeconomics and National Income Accounting
Introduction to Macroeconomic variables; microeconomic and macroeconomic approaches; basic issues studied in macroeconomics; measurement of GDP, GNP, NDP, NNP and NI; circular flow of income; problems encountered in measuring National Income; real versus nominal GDP -CPI, WPI and GDP deflator, National Income as a measure of welfare; National Income accounting for an open economy; balance of payments: current and capital accounts.

2. Money
Definitions of money – M1, M2, M3 and M4; Functions of money; determination of money supply; money creation by commercial banks; money multiplier; control of money supply by the central bank tools of monetary policy.

3. Inflation and Unemployment
a. Meaning of inflation, cost of inflation and hyperinflation
b. Money supply and Inflation - quantity theory approach
c. Concepts of unemployment, natural rate of unemployment, structural unemployment, frictional unemployment, cyclical unemployment, involuntary and voluntary unemployment

4. The Closed Economy in the Short Run
Simple Keynesian model of income determination - Keynesian consumption function, Autonomous investment and Income-Expenditure equilibrium, multiplier, Paradox of thrift; IS-LM model - Investment function and IS curve, Asset market equilibrium and LM curve, Determination of equilibrium income and interest rate, Comparative Statics - Monetary policies and fiscal policies

Readings
1. Dornbusch, R., Fischer, S. and Startz, R., Macroeconomics, McGraw Hill, 12th edition, 2014.
2. Mankiw, N.G., Macroeconomics, Worth Publishers, 7th edition, 2010.
3. Froyen, R.T., Macroeconomics, Pearson Education Asia, 2nd edition, 2005.
4. Sikdar, S., Principles of Macroeconomics, Oxford University Press, 2nd edition, 2011.
5. Hicks, J. R., M. Mukherjee and Shyamal K. Ghosh, the Framework of the Indian Economy: An

Introduction to Economics, Oxford University Press, 1989

Semester – 3

ECON205MC03: INDIAN ECONOMY I
Credit - 06 [Theory: 05; Tutorial: 01]
Contact hours per week: 06

Course Description

Using appropriate analytical frameworks, this course reviews major trends in economic indicators and policy debates in India in the post-Independence period, with particular emphasis on paradigm shifts and turning points. Given the rapid changes taking place in India, the reading list will have to be updated annually.

1. Economic Development since Independence
a. Major features of the economy at independence; growth and development under different policy regimes; regional disparities in growth rates
b. Sector-wise growth profile and changes of its contribution in GDP, structural change in employment.
c. Five Years Plans: Objectives, sources of plan financing, an assessment of performance of different plans
d. Trend of savings and capital formation; measures of mobilization of domestic savings; relation between savings rate, growth rate and ICOR

2. Population and Human Development
a. Demographic transition theory and dynamics of population in India; age, sex composition and development issues.
b. Education – literacy rate, enrolment ratio- gender discrimination in enrolment – trend in public expenditure for education; right to education and education policies
c. Health as an indicator of human development, life expectancy, child health, infant mortality; nature, causes and consequences of malnutrition; Trend in public expenditure for health and hygiene; mid-day meal programme and other policies of child and family welfare.
d. Human development index and progress of human development; HDI for several states over time.
e. Population policy; demographic dividend

3. Growth and Distribution
a. Different concepts of poverty and its measures; different estimates of poverty; recent controversy of poverty reduction; economic reforms and poverty in India; assessment of the poverty alleviation policies since independence.
b. Growth and inequality; trend of nature and causes of income inequality in India; rural urban disparity in income and wealth inequality; public measures to combat inequality in income and wealth; growth of large industrial houses and middle class.
c. Estimates of unemployment and its trend; unemployment rates and growth rates; changing dimensions of unemployment; Government plans and programs for reducing unemployment. Employment Guarantee Act-2005

4. International Comparisons
Comparison of India with other countries with reference to GNI and its inequality; GDP and employment share; income poverty; multidimensional poverty; Human development and other indicators

Readings

1. Jean Dreze and Amartya Sen, 2013. An Uncertain Glory: India and its Contradictions, Princeton University Press.
2. Pulapre Balakrishnan, 2007, The Recovery of India: Economic Growth in the Nehru Era, Economic

and Political Weekly, November.
3. Rakesh Mohan, 2008, ―Growth Record of Indian Economy: 1950-2008. A Story of Sustained Savings and Investment, Economic and Political Weekly, May.
4. S.L. Shetty, 2007, ―India's Savings Performance since the Advent of Planning, in K.L. Krishna and A. Vaidyanathan, editors, Institutions and Markets in India's Development.
5. Himanshu, 2010, Towards New Poverty Lines for India, Economic and Political Weekly, January.
6. Jean Dreze and Angus Deaton, 2009, Food and Nutrition in India: Facts and Interpretations, Economic and Political Weekly, February.
7. Himanshu. 2011, ―Employment Trends in India: A Re-examination, Economic and Political Weekly, September.
8. Rama Baru et al, 2010, ―Inequities in Access to Health Services in India: Caste, Class and Region, Economic and Political Weekly, September.
9. Geeta G. Kingdon, 2007, ―The Progress of School Education in India, Oxford Review of Economic Policy.
10. J.B.G. Tilak, 2007, ―Post Elementary Education, Poverty and Development in India, International Journal of Educational Development.
11. T. Dyson, 2008, ―India's Demographic Transition and its Consequences for Development in Uma Kapila, editor, Indian Economy Since Independence, 19thedition, Academic Foundation.
12. Kaushik Basu, 2009, ―China and India: Idiosyncratic Paths to High Growth, Economic and Political Weekly, September.
13. K. James, 2008, ―Glorifying Malthus: Current Debate on Demographic Dividend in India, Economic and Political Weekly, June.
14. Reetika Khera, 2011, ―India's Public Distribution System: Utilisation and Impact, Journal of Development Studies.
15. Aniruddha Krishna and Devendra Bajpai, 2011, ―Lineal Spread and Radial Dissipation: Experiencing Growth in Rural India, 1992-2005, Economic and Political Weekly, September.
16. Kaushik Basu and A. Maertens, eds, 2013, The New Oxford Companion to Economics, Oxford University Press.
17. Datt and Mahajan, 2017, Indian Economy (latest edition)
18. Government of India, Economic Survey, 2015-16, 16-17, 17-18
19. Human Development Reports UNDP ((latest)
20. M. Rakshit, Macroeconomics of Post Reform India, Oxford University Press, 2011

Semester – 4

ECON255MC04: INDIAN ECONOMY II
Credit - 06 [Theory: 05; Tutorial: 01]
Contact hours per week: 06

Course Description

This course examines sector-specific policies and their impact in shaping trends in key economic indicators in India. It highlights major policy debates and evaluates the Indian empirical evidence. Given the rapid changes taking place in the country, the reading list will have to be updated annually.

1. Macroeconomic Policies and Their Impact
a. Fiscal policy
b. Trade and investment policies
c. Financial and monetary policies
d. Labour regulations
2. Policies and Performance in Agriculture
Growth; productivity; agrarian structure and technology; capital formation; trade; pricing and procurement. NABARD and agricultural credit; land reforms

3. Policies and Performance in Industry

Growth; productivity; diversification; small scale industries; public sector; competition policy; foreign investment. Special Economic Zones

4. Trends and Performance in Services
Composition of service sector in India; trend of growth and contribution of service sector in GDP; share and growth of major services – tourism, hotel and restaurant; transport and storage; communication, information and broadcasting; public administration and defense; financial services; housing and real estate, research and development services, performance of the services in India's services trade; trend of FDI in India's services sector; policy issues for major services like tourism, shipping and port services, IT including software

Readings
1. Shankar Acharya, 2010, ―Macroeconomic Performance and Policies 2000-8, in Shankar Acharya and Rakesh Mohan, editors, India's Economy: Performances and Challenges: Development and Participation, Oxford University Press.
2. Rakesh Mohan, 2010, ―India's Financial Sector and Monetary Policy Reforms, in Shankar Acharya and Rakesh Mohan, editors, India's Economy: Performances and Challenges: Development and Participation, Oxford University Press.
3. Pulapre Balakrishnan, Ramesh Golait and Pankaj Kumar, 2008, ―Agricultural Growth in India Since 1991, RBI DEAP Study no. 27.
4. B.N. Goldar and S.C. Aggarwal, 2005, ―Trade Liberalisation and Price-Cost Margin in Indian Industries, The Developing Economics, September.
5. P. Goldberg, A. Khandelwal, N. Pavcnik and P. Topalova, 2009, ―Trade Liberalisation and New Imported Inputs, American Economic Review, Papers and Proceedings, May.
6. Kunal Sen, 2010, ―Trade, Foreign Direct Investment and Industrial Transformation in India, in Premachandra Athukorala, editor, The Rise of Asia, Routledge.
7. A. Ahsan, C. Pages and T. Roy, 2008, ―Legislation, Enforcement and Adjudication in Indian Labour Markets: Origins, Consequences and the Way Forward, in D. Mazumdar and S. Sarkar, editors, Globalization, Labour Markets and Inequality in India, Routledge.
8. Dipak Mazumdar and Sandeep Sarkar, 2009, ―The Employment Problem in India and the Phenomenon of the Missing Middle, Indian Journal of Labour Economics.
9. J. Dennis Rajakumar, 2011, ―Size and Growth of Private Corporate Sector in Indian Manufacturing, Economic and Political Weekly, April.
10. Ramesh Chand, 2010, ―Understanding the Nature and Causes of Food Inflation, Economic and Political Weekly, February.
11. Bishwanath Goldar, 2011, Organised Manufacturing Employment: Continuing the Debate, Economic and Political Weekly, April.
12. Kaushik Basu and A. Maertens, eds, 2013, The New Oxford Companion to Economics in India, Oxford University Press.
13. Chetan Ghate (Ed), The Oxford Handbook of the Indian Economy, OUP, 2012
14. Economic Survey (Latest)

Description of Advanced Minor Courses for Economics (Honours) with Research

Semester – 7

ECON442MC05: RESEARCH METHODOLOGY IN ECONOMICS
Credit - 04 [Sessional]
Contact hours per week: 04

Course Description

This course introduces research methodology in Economics.

1. Methodology of Economics

Approaches of Karl Popper, Milton Friedman and others; Concepts of falsifiability, positivism, etc.

References
1. Mark Blaug (1980) The methodology of Economics.
2. Daniel Hausman (1992) The inexact and separate science of Economics.

2. Planning empirical Research in Economics

a. Steps in Empirical Research: Posing a question – Literature Review – Data collection – Econometric analysis – Writing a paper.
b. Causal Explanation in Economics

References
1. Wooldridge, J. M. (2016) Introductory Econometrics: A Modern Approach, South-Western College Publishers, Chapters 1, 19.
2. Stock, J.H. & M. W. Watson (2015) Introduction to Econometrics, Pearson, Edinburg: Chapter 1.

3. Experiments and Quasi-experiments

a. History, Basics of Experimental Methods, Advantage and Limitation.
b. Potential Outcomes, Causal Effects, and Idealized Experiments
c. Threats to Validity of Experiments
d. Quasi-Experiments and their limitations
e. Experimental and Quasi-Experimental Estimates in Heterogeneous Populations
f. Randomized Control Trial
g. Select examples

References
1. Stock, J.H. & M. W. Watson (2015) Introduction to Econometrics, Pearson, Edinburg: Ch. 13.
2. Davis, D.D. and C.A. Holt (1993) Experimental Economics, Princeton University Press.
3. Angus Deaton (2010): "Instruments, Randomization, and Learning about Development" Journal of Economic Literature 48: 424–455.
4. Abhijit V. Banerjee and Esther Duflo (2009): "The Experimental Approach to Development Economics", Annual Review of Economics, Vol. 1: 151-178.
5. Dani Rodrik (2008): "The New Development Economics: We Shall Experiment, But How Shall We Learn?"
6. Angus Deaton and Nancy Cartwright (2016): "Understanding and Misunderstanding Randomized Controlled Trials", NBER Working Paper W22595.
7. Dina Pomeranz (2017): Impact evaluation methods in public economics

Semester – 8

ECON492MC06: RESEARCH AND PUBLICATION ETHICS
Credit - 04 [Sessional]
Contact hours per week: 04

Course Description

This course introduces research and publication ethics.

1. Philosophy and Ethics
a. Introduction to philosophy: Definition, nature and scope, concept, branches
b. Ethics: Definition, moral philosophy, nature of moral judgments and reactions.

2. Scientific conduct
a. Ethics with respect to science and research
b. Intellectual honesty and research integrity
c. Scientific misconducts: Falsification, Fabrication, Plagiarism (FFP)
d. Redundant publications: Duplicates, and overlapping publications, salami slicing
e. Selective reporting and misrepresentation of data.

3. Publication ethics
a. Publication Ethics: Definition, introduction and importance
b. Best Practices / standard setting initiatives and guidelines: COPE, WAME, etc.
c. Conflicts of interest
d. Publication misconduct: Definition, concept, problems that lead to unethical behaviour and vice versa, types
e. Violation of publication ethics, authorship, and contributor ship
f. Identification of publication misconduct, complaints and appeals
g. Predatory publishers and journals

4. Open Access Publishing
a. Open access publications and initiatives
b. SHERPA/RoMEO online resource to check publisher copyright & self-archiving policies
c. Software tool to identify predatory publications developed by SPPU
d. Journal finder / journal suggestion tools viz. JANE, Elsevier Journal Finder, Springer Journal Suggester, etc.

5. Publication Misconduct
A. Group Discussions –
i) Subject specific ethical issues, FFP, authorship
ii) Conflicts of interest
iii) Complaints and appeals: examples and fraud from India and abroad

B. Software tools
Use of plagiarism software like Turnitin, Urkund and other open-source software tools

6. Databases and Research Metric
A. Databases - a) Indexing databases, b) Citation databases: Web of Science, Scopus, etc.
B. Research Metrics - a) Impact Factor of journal as per Journal Citation Report, SNIP, SJR, IPP, CiteScore, b) Metrics: h-index, g index, i10 index, altimetric

References
1. Bird, A. (2006). Philosophy of science. Routledge.
2. MacIntyre, Alasdair (1967) A Short History of Ethics. London.
3. P. Chaddah, (2018) Ethics in Competitive Research: Do not get scooped; do not get plagiarized, ISBN:978-9387480865
4. National Academy of Sciences, National Academy of Engineering and Institute of Medicine. (2009).

5. On Being a Scientist: A Guide to Responsible Conduct in Research: Third Edition. National Academies Press.

6. Resnik, D. B. (2011). What is ethics in research & why is it important. National Institute of Environmental Health Sciences, 1-10. Retrieved from httos://www.nieiys.nih. ov/research/resources/bioethics/whatis/index.cfm

7. Beall, J. (2012). Predatory publishers are competing open access. Nature, 489(7415), 179—179. https://doi.org/10.1038/489179a

8. Indian National Science Academy (INSA), Ethics in Science Education, Research and Governance (2019), ISBN:978-81-939482-1-7. http://www.insaindia res.in/pdf/Ethics Book.pdf

Description of Multidisciplinary Courses in Economics

Semester – 1

ECON141MDC01: FILM APPRECIATION
Credit – 03 (Sessional)
Contact hours per week: 03

Course Description

The course seeks to broaden minds and vision of the students through an appreciation of film as an art form. Given the nature of the course and infrastructural constraints a maximum of 20 students will be allowed to enroll on a first come first served basis.

Examination will be sessional based on assignments and group-based projects

1. Film history
Evolution and genres

2. Film theories (optional)
Arnheim, Eisenstein, Balazs, Kraucauer, Bazin, Mitry, Auteur theory

3. Appreciating film
Appreciating the use of cinematography, sound and editing

4. Socio-economic realities in films
a. Narrative films
b. Documentaries: Works of Grierson, Flaherty, Dziga Vertov, Hitchcock's tribute to Grierson

5. Case studies (indicative)
a. Hitchcock's Vertigo, Carl Dreyer's Day of Wrath, Ford's Stage Coach, Murnau's Mabuse – Inferno of crime, Michael Kalatozov's Cranes are flying, Bergman's Wild Strawberries, Antonioni's La'Aventura.
b. Harry Watt and Basil Wright's Night Mail, Robert Flaherty's Nanook of the North, John Grierson's Drifters
c. Selection of short films

Essential reading:
1. Bordwell, David, Thompson, Kristin & Smith, Jeff (2019) Film art: an introduction, 12 ed. McGraw Hill: New York.
2. LoBrutto, Vincent (2005) Becoming film literate: the art and craft of motion pictures. Prager: Westport, London.
3. Fabe, Marian (2005) Closely watched films: an introduction to the art of narrative film technique. University of California Press: Berkeley, California.

Additional references:
4. Andrews, J. Dudley (1976) The major film theories: an introduction. Oxford University: Oxford.
5. McCann, R.D. (1966) Film: a montage of film theories. E.P. Dutton: New York.
6. Cristian, R.M. and Dragon, Z. (2008) Encounters of the filmic kind: A guidebook to film theories. Yate press.

7. Hullfish, Steven (2017) The art of the cut: conversations with film and TV editors. Routledge: New York.
8. Druick, Z. and Williams, D. (2014) The Grierson effect: tracing documentary's international movement. British Film Institute.
9. Sussex, E. and Grierson, J. (1972) "Grierson on documentary: the last interview". Film Quarterly, Vol. 26, No. 1 (Autumn, 1972), pp. 24-30.
10. Wood, R. (1960). Hitchcock's Films Revisited (2nd ed.). Columbia University Press.
11. Spoto, D. (1992) The art of Alfred Hitchcock: fifty years of his motion pictures, 2 ed Random House: New York.

Semester – 2

ECON 191MDC02: EMOTIONAL INTELLIGENCE AND ORGANIZATIONAL EXCELLENCE
Credit – 03 (Sessional)
Contact hours per week: 03

Course Description

This course introduces emotional intelligence as a powerful component of effective leadership and job performance. The students will learn how such hot intelligence helps us understand ourselves, build and maintain strong personal and professional relationships, and effectively lead others. Given the nature of the course and infrastructural constraints a maximum of 20 students will be allowed to enroll

Examination will be sessional based on assignments and group-based projects

1. Emotional Intelligence defined
Intelligence Quotient versus Emotional Quotient, Emotional and Social Intelligence

2. Models and Measures of Emotional Intelligence
Bar-On Model, Ability-Based Model, Mixed Model of Emotional Intelligence, Trait Based Model

3. Understanding role of Emotional Intelligence in workplace, leadership and job performance

4. Case studies

Readings
1. Bar-On, R. (1997). Bar-On emotional quotient inventory (EQ-I): Technical manual. Toronto: Multi-Health Systems.
2. Bar-On, R. (2000). Emotional and social intelligence: Insights from the emotion quotient inventory. In R. Bar-On & J. Parker (Eds.), The handbook of emotional intelligence (pp. 363–388). San Francisco: Jossey-Bass.
3. Bar-On, R. (2002). Bar-On emotional quotient inventory (EQ-I): Technical manual. Toronto: Multi-Health Systems.
4. Bar-On, R. (2004). The Bar-On emotional quotient inventory (EQ-i): Rationale, description, and summary of psychometric properties. In G. Geher (Ed.), Measuring emotional intelligence: Common ground and controversy (pp. 111–142). Hauppauge, NY: Nova Science Publishers.
5. Goleman, D. (1995). Emotional intelligence. New York: Bantam Books.
6. Goleman, D. (1998a). Working with emotional intelligence. New York: Bantam Books.
7. Goleman, D. (1998b). What makes a leader? Harvard Business Review, 76(November–December), 93–102.
8. Goleman, D. (2001). Emotional intelligence: Issues in paradigm building. In C. Cherniss & D. Goleman (Eds.), The emotionally intelligent workplace. San Francisco: Jossey-Bass.
9. Mayer, J. D., & Salovey, P. (1997). What is emotional intelligence? In
10. P. Salovey & D. J. Sluyter (Eds.), Emotional development and emotional intelligence: Educational implications (pp. 3–31). New York: Basic Books.
11. Mayer, J. D., & Stevens, A. (1994). An emerging understanding of the reflective (meta-) experience of mood. Journal of Research in Personality, 28(3), 351–373

Semester – 2

ECON 192MDC03: SPORTS MANAGEMENT
Credit – 03 (Sessional)
Contact hours per week: 03

Course Description

Sports management is the field of business dealing with sports and recreation. This paper will try to look into the combination of skills that correspond with the planning, organising, directing, controlling, budgeting, leading or evaluation of any organisation or business within the sports field. Given the nature of the course and infrastructural constraints a maximum of 20 students will be allowed to enroll

1. Introduction to sports management
2. A brief history of sports management – *Arnold Palmer and IMG (Handshake deal)*
3. Sports and economics
4. Global sports business – *Olympic games, FIFA, EPL, Asian Games, US Open and other major events*
5. Sports analytics management – *with special reference to EPL and IPL*
6. Sports broadcasting and journalism
7. Sports media marketing and sponsorship – *discussion about some major sports deals*
8. Sports event management

References
1. Phil Andrews (2013): *Sports Journalism: A Practical Introduction*. Sage Publication Ltd.
2. Boria Majumdar (2017): *A History of Indian Sports Through 100 Artefacts*. Harpersport.
3. Lrrds, Allmen and Matheson (2019): *The Economics of Sports*. Taylor and Francis.
4. Shank and Lyberger (2014): *Sports Marketing: A strategic perspective*. Routledge.
5. Fullerton and Merz (2008): "The four domains of sports marketing: A conceptual framework". *Sports Marketing Quarterly*, 17 (2).

Description of Value-Added Course in Economics

Semester – 4

ECON292VAC02: STOCK MARKET FOR BEGINNERS
Credit – 03 (Sessional)
Contact hours per week: 03

Course Description

This course would help the beginners to comprehend the concepts and issues relating to investment in stock market. The students will develop ideas about the nature of challenges one would face in managing financial investment and risk in real world. Evaluation will be based on assignments in collecting, analysing and presenting the data.

1. Understanding stock market – concepts and issues – efficiency and anomalies
2. Evaluating firm health using financial ratios – valuation of stocks for investment
3. Foundation of Technical Analysis - trading with chart patterns
4. Creation of beginner investment portfolio

Readings
1. Brealey, R.A., Myers, S.C., and Allen, F., Principles of Corporate Finance, McGraw-Hill, 12th edition, 2017.
2. Ross, S.A., Westerfield, R.W. and Jordan, B.D. Fundamentals of Corporate Finance. McGraw-Hill, 7th edition, 2005.