



Mumbai School of Economics & Public Policy (Autonomous)

Students' Information Brochure 2026-27

M.A. (Credit Based)

University of Mumbai



ABOUT THE MUMBAI SCHOOL

The Mumbai School of Economics and Public Policy (Autonomous), formerly the Department of Economics, University of Mumbai, is the oldest economics department in the country, having been founded in 1913 and has been making significant contributions to academics and policy making at the local and national level. The research output is noted for its innovativeness, relevance and sensitivity to current socio-economic problems.

The Mumbai School has a distinguished legacy of teachers and intellectuals, such as Professors C.N. Vakil, M.L. Dantwala, D.T. Lakdawala, P.R. Brahmananda, Kanta Ranadive, T.S. Papola, P.R. Panchamukhi, V.R. Panchamukhi, Ranganath Bhardwaj, J.C. Sandesara, L.K. Deshpande, D.M. Nachane, M.J.M. Rao, among other stalwarts such as Professor V.K.R.V. Rao, Dr. Bimal Jalan, and Lord Meghnad Desai. The Mumbai School of Economics members are consultants to international bodies like the IMF, the World Bank, UNDP, UNICEF, UNW, ILO, and government bodies like the Planning Commission and the Reserve Bank of India, as well as to various state governments and local bodies. The private sector, too, has benefitted immensely from its pool of expertise. In addition, the faculty publish widely in reputed national and international journals and have made seminal contributions in their respective fields. In recognition of this contribution, the Planning Commission, the Reserve Bank of India, as well as private institutions and corporate organisations have instituted a total of five Chairs in the Department, viz. the RBI Chairs in Monetary Economics and Dr. Babasaheb Ambedkar Chair in Political Economy, the Walchand Hirachand Unit in Transport Economics, the Dr. Vibhuti Shukla Unit in Urban Economics and Regional Development, Dr. D.T. Lakdawala Chair in Planning and Development.

The Mumbai School of Economics is well connected with other academic institutions. These make it possible to exchange expertise in several key areas and to have research collaborations. Academic visitors are also invited to spend time at the School and benefit from their learning.

Due to its academic credentials, the Mumbai School of Economics & Public Policy was recognised as a Centre for Advanced Studies in Economics by the University Grants Commission since 1963 until the Scheme concluded in 2024. The Department has been granted an Autonomous status, further recognizing its stellar role on the Indian academic map. The Mumbai School does not believe in resting on its laurels. However, its greatest asset is its set of competent and experienced teachers who are regularly available to the students in an atmosphere of warm cordiality. Regular attempts are made to make qualitative improvements in teaching and research standards. Since 2007, a M.A. programme with a choice-based credit system has been instituted in addition to a thriving Ph.D. programme. The available facilities include a well-appointed computer laboratory where students are imparted hands-on training in the latest software; workstations; well-designed conference rooms; and a stimulating departmental library and a facility for FIP research scholars.

From the academic year 2023-24, the Mumbai School of Economics has adopted the NEP 2020 and this has led to the inclusion of several computer application based courses which are aimed at skill enhancement and employability of students.

NEP Structure for Courses

Year (2 Year PG)	L E V E L	Sem (2 Yr)/Sem (5Yr)	Department-Specific Component (Major – Specialization papers)		Other Papers		OJT / FP	R P	Cumulative Credits	Degree
			Mandatory	Electives						
I	6.0	Sem I	Microeconomics I (4) Macroeconomics I (4) Basic Mathematics for Economists (4) Basic Statistics (2)	Agricultural Development & Policy (4) OR Economics of Human Development (4) OR Economics of Climate Change and Resource Development (4) OR Health Economics (4) OR Public Choice (4) OR Urban Economics (4)		RM:4			22	PG Diploma (after 3 Year Degree)
		Sem II	Public Economics (4) Development Eco (4) Basic Econometrics (4) Advanced Excel (2)	Economics of Social Infrastructure (4) OR Gender Economics (4) OR Financial Economics (4) OR Industrial Economics (4) OR Rural Political Economy (4) OR Theory of Monetary Institutions (4)			4		22	
	Cum.Cr.For PG Diploma		28	8		4	4	-	44	
	Exit Option: PG Diploma (44 credits) After Three Year UG Degree									
II	6.5	Sem III	Microeconomics II (4) Macroeconomics II (4) Introduction to Data Analytics (2) Basics of Python (2) R Programming (2)	Economics of Labour Market (4) OR Environmental Economics (4) OR Economics of Health and Education (4) OR International Finance (4) OR Indian Public Finance (4) OR Political Economy of Reforms (4)				4	22	PG Degree after 3 Year UG
		Sem IV	Agricultural Economics (4) International Economics (4) Introduction to AI/ML (2) Stata/Eviews (2)	Banking :Theory &Policy (4) OR Economics of Services (4) OR Financial Derivatives (4) OR Multiple Linear Regression & its Extensions (4) OR Time Series Econometrics (4) OR Trade Unions and Industrial Relations (4)				6	22	
Cum. Cr. For 1 Yr PG Degree			26	8				10	44	
Cum. Cr. For 2 Yr PG Degree			54	16		4	4	10	88	
		Note: Number of electives on offer each semester may vary								

B.A. (Honours) with Specialization in Economics
Credit Structure

SEMESTER I		SEMESTER II	
Core Papers	Credits	Core Papers	Credits
Microeconomics I	4	Development Economics	4
Macroeconomics I	4	Public Economics	4
Mathematics for Economists	4	Basic Econometrics	4
Research Methodology	4	Advance Excel	2
Basic Statistics	2		
Electives (Any One)		Electives (Any One)	
Agricultural Development and Policy	4	Health Economics	4
Public Choice: Theory and Applications	4	Industrial Economics	4
Economics of Services	4	Rural Political Economy	4
Gender Economics	4	Financial Economics	4
Environmental Economics	4	On Job Training (OJT)	4
Total Credits	22	Total Credits	22
Total Credits Semester I + II = 44 Credits 1 credit = 15 Hours			

B.A. (Honours) with Specialization in Economics
Credit Structure

SEMESTER I		SEMESTER II	
Core Papers	Credits	Core Papers	Credits
Microeconomics I	4	Development Economics	4
Macroeconomics I	4	Public Economics	4
Mathematics for Economists	2	Basic Econometrics	2
Research Methodology	4		
Electives (any one)		Electives (any one)	
Agricultural Development and Policy	4	Financial Economics	4
Public Choice	4	Environmental Economics	4
Gender Economics	4	Industrial Economics	4
Environmental Economics	4	Rural Political Economy	4
Research Project	4	Research Project	8
Total Credits	22	Total Credits	22
Total Credits Semester I + II = 44 Credits 1 credit = 15 Hours			

FACULTY AND RESEARCH STAFF

Director

Manisha Karne

Professor

M.A. and Ph.D. (University of Mumbai, Mumbai)

Areas of Interest: Development Economics, Social Infrastructure, Transport Economics

Professors

Mala Lalvani

Professor

M.A. and Ph.D. (University of Mumbai, Mumbai)

Areas of Interest: Public Economics, Political Economy, Public Choice, Applied Econometrics

Swati Raju

Professor

M.A. and Ph.D. (University of Mumbai, Mumbai)

Areas of Interest: Public Economics, Applied Econometrics, Financial Economics, Gender Economics

Suresh Maind

Professor

M.A. and Ph.D (Dr. Babasaheb Ambedkar Marathwada University)

Areas of Interest: Infrastructure Economics, Agriculture Economics, Monetary Economics.

G. Bharathi Kamath

Associate Professor

M.A., M.Phil, Ph.D. (Osmania University, Hyderabad)

Areas of Interest: Industrial Economics, International Economics, Economics of Intangibles

Medha Tapiawala

Professor

M.A. and Ph.D. (University of Mumbai, Mumbai)

Areas of Interest: Entrepreneurship, Gender Economics, Environmental Economics, Economics of Development

Satyanarayan Kothe

Professor

M.A. (Swami Ramanand Teerth Marathwada University), Ph.D. (University of Mumbai, Mumbai)

Areas of Interest: Economics of Services, Mathematical Economics, Transportation Economics, Environmental Economics

Anuradha Patnaik

Professor

M.A. (Nagpur University, Nagpur), Ph.D. (IIT, Mumbai)

Areas of Interest: Applied Econometrics, Monetary Economics, Open Economy Macroeconomics

Endowment Chair Professor

Subrata Mukherjee

Professor, Dr Babasaheb Ambedkar Chair in Political Economy (RBI Chair)

M.A. (Visva Bharati, Shantiniketan), MPhil (CDS, Jawaharlal Nehru University, New Delhi), PhD (CDS, Jawaharlal Nehru University, New Delhi)

Areas of Interest: Health Economics, Labour & Migration, Field Survey Techniques, Econometrics & Machine Learning Modelling.

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Fellow B

Arpita Jai Shah

Fellow (B) (18 months so far)

M.A. Economics (2011-13), Mumbai School of Economics and Public Policy;

Ph.D Economics (Ongoing),

Mumbai School of Economics and Public Policy

Areas of Interest: Development Economics, Health Economics, Spatial Statistics and Spatial Econometrics

For further details about the faculty, including detailed CVs, please
check:http://www.mu.ac.in/arts/social_science/eco/faculty.html

Research (Ph.D) Students

Students who have been awarded the degree, submitted synopsis/ thesis and registered for
Ph.D in academic year 2024-25 onwards

Names of Student	Title of Thesis	Date of Registration	Current Status
Prof. Manisha Karne			
1.Shatrughana Lohakare	Performance of Self-help groups promoting institution in Raigad district	136/15-04-2015	On-going
2.Rashmie Parmour	Evaluation of learning outcomes in schools: Application of experimental approach.	188/03-05-2023	On-going
3.Arпита shah	An inter district analysis of food security in rural Gujarat	189/06-06-2023	On-going
4.Shilpa Khan	Financial Inclusion and Empowerment of women in Maharashtra: A study of Mann Deshi Mahila Sahakari Bank.	197/30-08-2023	On-going
5. Shail Kapri	The Economic Impact of workforce health in India.		On-going
6. Prasad Bhosale	Economic Impact of Forest Right Act 2006 on forest based livelihoods: An Assessment in Maharashtra context.		On-going
7. Suffiya Shaikh	Economic Impact of Digital Learning Technologies of Labour Market Dynamic		On-going
8. Nargish Killare	A study of socioeconomic and Health conditions of Transgender community in Mumbai Metropolitan Region.	5/10-01-2019	Degree Awarded
Prof. Mala Lalvani			
1.Aniket Bhatkhande	An Analysis of Demand for Non-Convex Ecosystem Resources and its implications for Policy: Focusing on firewood in Chandrapur District, Maharashtra.	7/07-03-2020	On-going
2.Nilesh Ghonasgi	An Assessment of slum rehabilitation Authority (SRA) performance.	174/12-10-2022	On-going
3.Purvash Gada	Capability Development for Effective Disaster Management.		On-going
4.Radhika Talekar	An Empirical Study of Digital Inclusion in Maharashtra.	181/9-1-2023	On-going
5.Souvik Mondal	A Gender Discourse on Multi-Dimensional Poverty and Inequality in south Asian Countries: A special focus on India.	184/3-7-2023	On-going
6.Monika Sethi	Millet Economy and Public Policy.		On-going
Prof. Swati Raju			
1.Eknath Lahamate	A study on the Livelihoods of the Tribal Community in Nashik District: Analysis of Crop Husbandry and Animal Husbandry Schemes.	177/13-10-2022	On-going
2. Puraskar Chakrabarti	Asset Pricing in the Indian Equity Market: A study of Multifactor Models.	179/07-12-2022	On-going

3.Disha Kheterpal	The Finance Growth Nexus for India	192/1-09-2023	On-going
4.Radheshyam Verma	Systemic Risk and Financial stability in the Indian Banking Sector.		On-going
5.Vaishnavi Patil	Education in India: Issues of equity and efficiency		On-going
Prof. Suresh Maind			
1.Soham Chatterjee	The challenge of impending water scarcity in Maharashtra: In context of the agricultural sector.	177/13-10-2022	On-going
2. Swati Ingle	Trends in Agricultural Development in Vidarbha Region of Maharashtra	164/18-04-2022	On-going
3. Vaibhav Shelgaonkar	Human Development of Marathwada Region in Maharashtra state: An Empirical Study.	172/25-11-2022	On-going
4.Mahadeo Choure	Socio-Economic Development of women Entrepreneurs in the Pune District: An Analytical study (2000-2001 to 2019-2020)	178/19-10-2022	On-going
5.Manali Pawar	An Experimental study of route choice behaviour.	170/21-04-2022	On-going
6.Pramod Dagade	An Impact of irrigation infrastructural facilities on Agriculture comparative study of Western Maharashtra and Marathwada Region.	194/9-10-2023	On-going
7. Gaurav Ghadi	Impact of Gosekhurd Irrigation Project on farmers income convergence in Vidarbha region (with special reference to Chandrapur, Nagpur and Bhandara Districts)	196/16-2-2024	On-going
Prof. Bharathi Kamath			
1.Ravindra Muley	Analytical Study of Reinsurance utilization in Non-Life Insurance companies in India.	8/09-03-2020	Synopsis Submitted
2. Rosie Murray	Board Gender Diversity of firms in India: An Exploratory Study.	173/01-08-2022	On-going
3. Sanjeev Kumar Gupta	Analysis of India's External Account Emerging Challenges		On-going
4. Shreshtha Sharma	Competitiveness and Efficiency: A performance Analysis of Indian Pharmaceutical Industry.		On-going
Prof. Medha Tapiawala			
1.Anjali Singh	Role of Women Entrepreneurship in the Empowerment of women and Scope of Public Policies.	13/8-01-2021	On-going
2. Lorraine Vaz	The Impact of Nudge in the Swachh Bharat Mission of the Government of India	180/14-12-2022	On-going
3. Swapnil Salvi	Gender equality and Disaster Management		On-going
4. Sandhya Menon	Development Economics, Environmental Economics	182/10-1-2023	On-going
5. Shivali Thakar	Upsurge of the solar industry in renewable energy generation in India: The study of scope for start-ups.	185/20-03-2023	On-going
6. Abhiraj Patil	Holistic Model for Sustainable Development towards Renewable Energy (Solar) with respect to Start-ups and Agriculture with support from Local Government Bodies and Private Sector	186/20-03-2023	On-going
Prof. S.K. Kothe			

1.Vishal Vasudeo	Estimation and optimisation of profit for tomato and Banana farmers: with a solution of real time profit function.	190/21-6-2023	Ongoing
2.Sanjay Dayare	An assessment of environmental factors affecting quality of urban life in Maharashtra: A study of Navi Mumbai Municipal Corporation.	191/1-8-2023	On-going
3.Bipul Ghosh	Nowcasting: Modelling a real-time estimation method for gross domestic product.	193/02-092023	On-going
4.Aakash Ingawale	A study on Socio-Economic status of lohar tribe in Maharashtra state.	183/15-06-2023	On-going
5.Swati Mithbavkar	Impact of national highway development on employment, health education and poverty with special reference to NH-52 from Solapur to Dhule.	195/10-11-2023	On-going
6. Sudipta Dutta	On Determinants and Impact of capital Flows		On-going
7. Supriya Nikam	Evaluating and Enhancing the efficiency and equity in Horizontal and Vertical fund devolution by the Finance Commission in India.		On-going
8. Sachin Mungase	An Analysis of structural changes in BRICS.	1/19-09-2016	Thesis Submitted
Prof. Anuradha Patnaik			
1.Kumar Rakesh	Trends in Sectoral Prices and Volatility from Global Spillovers in India.	152/15-02-2016	On-going
2.Debashish Ghosh	An empirical analysis of Indian corporate bond credit rating.	161/31-03-2018	On-going
3.Rashi Bagga	Corporate Social Responsibility: The Indian Scenario	9/10-09-2020	Synopsis Submitted
4.Sagar Raut	Interaction between Financial Cycle and business cycle-A case of India.	10/29-09-2020	On-going
5.Dhanya V	Structural and Empirical Analysis of Indian Labour Market		On-going
Prof. Neeraj Hatekar (Former Faculty)			
1.Ruben Sarin	Inequality in Income Health and Education in Maharashtra.	47/17-10-2008	On-going
2.Dattatray Yadav	Revisiting Divisia Money.	03/21-09-2016	On-going
3. Susanta Datta	Comparative Performance of Range Based and Return Based Volatility Models: Evidence From Emerging Market Economies (EMEs).	169/11-01-2019	Degree Awarded
Prof. Dolly Sunny (Retired)			
1.Sneha Pawar	A Study of Performance of Textile Industry in India with respect to Efficiency, Employment and Wages".	11/27-10-2020	Synopsis Submitted
2.Shweta Dubey	Self help groups and women migrant workers in construction industry of Greater Mumbai.	12/06-11-2020	On-going

3.Chetan Varma	A study of Socio-Economic conditions and Anthropology of tribal area in Palghar District and Proutish Solution toward Development.	167/28-04-2022	On-going
4.Sonali Bare	A study of infant mortality and its gender pattern in Maharashtra	176/14-10-2022	On-going
5.Chitrarth Kate	A study on issue and challenges for electric motorcycle and passenger vehicle industry of India.	165/21-04-2022	On-going
6.Prasad Sadvilkar	Developing double entry accounting system for environmental accounting to assess & mitigate environmental damages: The case of India.	166/25-04-2022	On-going
7.Abhijeet Barse	Foreign Direct Investment service sector growth and employment generation in India.	168/28-04-2022	Synopsis Submitted
8.Zeba I. Shaikh	Implications of Gig Economy on the future of work of the app based online services with special reference to Mumbai (suburban).	175/14-10-2022	
Dr. B. M. Khamkar			
1.Sonawane Mariba	The Problem of Increasing Non-Agricultural use of Agricultural Land in the Villages Bordering to Latur Munciapal Corporation.	109/22-08-2013	
2. Neelam Dhuri	The Economics & role of regional fruit research station in horticulture development of Sindhudurg District.	131/5-09-2014	Thesis Submitted
3. Kunkerkar Keshar	The economics problems of fruit processing industry in South Kokan.	133/15-01-2015	Viva completed
Dr. Prakash Salvi			
1.Jadhav Samiksha	Patterns of Economic Development of Indian States	112/15-10-2013	On-going
2.Acharya Amarendra	International Financial Integration Behaviour of Indian Financial Market: An empirical analysis.	151/15-02-2016	On-going

**Syllabus of M.A. programme
(NEP, 2020)**

Microeconomics I (ECO 101)

When offered: Semester: I

Number of Credits: 4

Preamble: This is a one-semester course taught over 48 one-hour sessions. The course is divided into 4 modules of 12 sessions each. The method of instruction will be exclusively lectures. The objective is to introduce students to modern microeconomics in a gradual fashion, leading up to Microeconomics II, which will be offered in the second semester. Microeconomics I will cover the traditional approaches to microeconomics, assuming complete markets, nonstrategic, utility-maximizing individuals, as well as profit-maximizing firms in a competitive market setup with symmetric, perfect and complete information.

Prerequisites: Undergraduate level microeconomics, Basics of mathematical economics.

Course outcomes for Microeconomics I (ECO 101)

CO1: Develop a nuanced understanding of traditional neoclassical microeconomic theory

CO2: Understand utility-maximizing consumer behavior along with the behavior of the profit-maximizing firm and general equilibrium analysis under the assumptions of complete and competitive markets and symmetric, perfect and complete information.

CO3: Ability to have necessary theoretical insights to study the modern microeconomic theory.

Module 1: Utility Analysis (15 Hours)

Choice, preference, rational choice and revealed preference, existence of the utility function- consumer's problem and the demand function, expenditure and indirect utility functions

Module 2: Demand Analysis (15 Hours)

Demand function, income-compensated demand functions, Slutsky matrix, and their properties, measurement of efficiency, duality, measuring of welfare effects of a price change

Module 3: Production Analysis (15 Hours)

Production: returns to scale and varying proportions, production functions (Cobb Douglas, CES) and input demand functions and their properties, costs, Derivation of SR and LR supply curve, classical model of the equilibrium of the firm, optimal size of the firm, duality in production, profit function and its properties,

Module 4: Perfect Competition, Walrasian General Equilibrium in a Pure Exchange Economy (15 Hours)

Excess demand function and its properties, tâtonnement process and the proof of existence of general equilibrium (application of Brouwer's fixed point theorem), exchange, core and equilibria.

References:

1. Gravelle, H. and R. Rees, Microeconomics, Pearson Edition, 2004.
2. Jehle, G.A. and P.J. Reny, Advanced Microeconomic Theory, Addison-Wesley Longman, 2000
3. Mas-Colell, A., M.D. Whinston, and J. Green, Microeconomic Analysis, Oxford University Press, 2005
4. Varian, H.R., Microeconomic Analysis, WW Norton & Co., 1992

Macroeconomics I (ECO 102)

When Offered: Semester I

Number of Credits: 4

Preamble: Macroeconomics I is an introduction to aggregative relationships in an economy. Since it is the first comprehensive glimpse of the subject by a number of students, the course effectively but rigorously covers the syllabus of an undergraduate course. At the same time, the texts twist and turn the familiar material to open up novel possibilities. The books are only indicative and others may be used. The treatment can be graphical. However, as technical skills develop, particularly by the last module, mathematical optimization techniques might be used.

Course outcomes for Macroeconomics I (ECO102)

CO1: To understand the basics and essential aggregative relationships in an economy through concepts of income and expenditure, savings & investment

CO2: Understand the determination of income and price levels through the aggregate demand and supply model.

CO3: Understand the dynamics of an open economy through basic concepts. Appreciate the role and response of monetary and fiscal policy on unemployment, trade balance, interest rates and price levels under fixed and flexible exchange rates

CO4: Understand the micro-foundations of macroeconomics related to consumption and investment.

Module 1: Macroeconomic Accounting (15 Hours)

Stocks and Flows; Output and Income; Income and Expenditure; Saving and Investment; Real and Nominal Income; The open economy.

Module 2: Determination of National Income and the Price Level (15 Hours)

The Keynesian Model: IS-LM Analysis, Fiscal and Monetary Policy. The role of expectations: The AS-AD Model; Inflation and Unemployment.

Module 3: The Open Economy (15 Hours)

Definitions and Concepts: The trade balance, Balance of Payments, Capital Mobility
Automatic adjustment, the classical approach

Fixed Exchange Rates: The IS-LM-BP model, Monetary and Fiscal Policy
Flexible Exchange Rates: The IS-LM-BP model, Monetary and Fiscal Policy

Module 4: Microfoundations of Macroeconomics (15 Hours)

Consumption: Consumption smoothing, temporary and permanent shocks
Investment: The optimal capital stock, irreversibility and investment.

The demand for money: Money, bonds, and private wealth, financial assets
Seigniorage: The optimal level of seigniorage.

References:

1. Carlin, W. and S. David, Macroeconomics, Oxford University Press, 2007
2. D'Souza, E., Macroeconomics, Dorling Kindersley (India) Pvt Ltd, 2012
3. Michl, T., Macroeconomic Theory, PHI Learning, 2009

Mathematics for Economists (ECO 103)

When Offered: Semester I

Number of Credits: 4

Preamble: The orientation follows Avinash Dixit's classic on the subject. Thus, working backwards from the requirements of dynamic optimization, static optimization is covered and, over the first two modules, the mathematical background is required to appreciate the last two modules. The texts are illustrative and any proper subset may be used. The expectation is that the instructor will sketch/prove theorems depending on the level of the class and focus on problems drawn from the microeconomics and macroeconomics courses.

Course outcomes for Mathematics for Economists (ECO 103)

CO1: Demonstrate knowledge and understanding of Mathematical techniques like calculus, matrix algebra and integration to apply to economic theories

CO2: Use a mathematical approach in microeconomics, macroeconomics, and all other applied courses.

CO3: Model economic questions as mathematical problems.

CO4: Use creativity and innovation in problem-solving.

Module 1: Background I (15 Hours)

Elements of set theory: $\mathbb{R}$ and $\mathbb{R}^n$; sequences & limits; open & closed sets; compact sets

Functions: continuity; linear functions; concave and quasi concave functions

Vectors and matrices: the determinant; quadratic forms

Module 2: Background II (15 Hours)

The derivative: partial derivatives; implicit differentiation; total derivatives; Unconstrained and constrained optimization; concave programming; Differential Equations: stability

Module 3: Static Optimization (15 Hours)

Integration: definite and indefinite integrals; integration by parts; The Kuhn-Tucker theorem

Module 4: Dynamic Optimization (15 Hours)

Calculus of Variations

The Maximum Principle

Dynamic Programming

References:

Essential Readings

1. Chiang, A.C., Fundamental Methods of Mathematical Economics, McGraw-Hill, 2005
2. Elements of Dynamic Optimization, McGraw-Hill, 1992
3. Simon, C.P. and B. Lawrence, Mathematics for Economists, Viva Books Pvt Ltd, 1994
4. Sydsaeter, K., P. Hammond, and S. Arne, Essential Mathematics for Economic Analysis, Pearson, 2012

Additional Readings

1. Binmore, K., Foundations of Analysis, Books 1 & 2, Cambridge University Press, 1980
2. Dixit, A., Optimization in Economic Theory, Oxford University Press, 1990

Basic Econometrics (ECO 104)

When offered: Semester II

Number of Credits: 4

Preamble: The course is designed to introduce students to elementary econometric methods and their applications. The teaching will emphasize a combination of theory and empirical applications.

Course outcomes for Basic Econometrics (ECO 104)

CO1: Reasonable familiarity with statistical thinking in applying data to problems

CO2: Using techniques like linear regression and time series models to make inferences and predictions for real-world problems

Module 1: Linear Regression Model (15 Hours)

Two variable model:- estimation of parameters, properties of estimators, hypothesis testing and model validation (application only). Extension to multiple linear regression model. Use and interpretation of dummy variables as regressors

Module 2: Classical Assumptions (15 Hours)

Heteroskedasticity, autocorrelation and multicollinearity: implications, corrective measures, Outliers:-implication and detection, non-normality of errors and bootstrapping of confidence intervals

Module 3: Systems of equations and Binary dependent variables (15 Hours)

Endogeneity and specification issues, Structural form and reduced form models, identification, instrumental variables and two stage least squares. Binary dependent variables (Logit & Probit Models).

Module 4: Introduction to time series and panel data (15 Hours)

Stationary and non-stationary time series, tests of stationarity, Types of Univariate Time Series Models. Difference between Pooled data and Panel data, Fixed Effects Model and Random effects model

References:

1. Gujarati, D. N., & Porter, D. C. (2009). Basic Econometrics (5th ed.). McGraw-Hill.)
2. Hatekar, Neeraj R. Principles of Econometrics: An Introduction (Using R). New Delhi: Sage Publications, 2010

Essential Readings

1. Bhaumik, S K. "Principles of econometrics: A modern approach using Eviews." *OUP Catalogue* (2015).
2. Wooldridge, J., Introductory Econometrics: A Modern Approach, Cengage Learning, 2009.
3. Kennedy, P., A Guide to Econometrics, MIT Press, 2005.
4. Stock, J. H. and Watson, M. W. (2011): Introduction to Econometrics, Pearson Education Inc.

Microeconomics II (ECO 106)

When Offered: Semester III

Number of Credits: 4

Preamble: The course is designed to introduce students to methods of analysing strategic microeconomic behaviour in the context of asymmetric and incomplete information.

Course outcomes for Microeconomics II (ECO 106)

CO1: Ability to analyse real-world outcomes using applications of microeconomic concepts:

CO2: Develop analytically tractable models of strategic interaction that can provide insight into real economic phenomena

Module 1: Introduction to Game Theory (15 Hours)

Normal and extensive form games, pure and mixed strategy Nash equilibria, sequential games, backward induction and sub-game perfect Nash equilibria, Cournot model, Bertrand model, Stackleberg model.

Module 2: Economics of Information (15 Hours)

Optimal contracts under symmetric and complete information, moral hazard and optimal contract design, Bayesian games and Bayesian Nash equilibria, Adverse Selection, Signalling and Pooling equilibria.

Module 3: Industrial Organisation-I (15 Hours)

Market power and dominant firms, non-linear pricing and price discrimination, product quality, welfare implications of monopoly.

Module 4: Industrial Organisation-II (15 Hours)

Dynamic models of oligopoly, Product Differentiation, Address Models and Strategic Behaviour, Product Differentiation in vertically integrated firms.

References:

1. Gibbons R., A Primer in Game Theory, Princeton University Press, 1992.
2. Church, J.R. and R. Ware, Industrial Organisation: A Strategic Approach, McGraw Hill, 2000.
3. Maco-Staedler, I. and D. Perez-Castrillo, Economics of Information and Contracts, OUP, 2001.
4. Binomre, K., Game Theory: A Very Short Introduction, OUP, 2010.

Macroeconomics II (ECO 107)

When Offered: Semester III

Number of Credits: 4

Preamble: Macroeconomics-II is modern macroeconomics in that it deals with the New Classical and New Keynesian frameworks. By this time, the compulsory mathematics course will have been covered and students can appreciate the techniques of dynamic optimization that underlie the course. Here too, the texts are only suggestive and others may be used.

Course outcomes for Macroeconomics II (ECO 107)

CO1: To understand the IS curve in the DSGE framework

CO2: To understand the evolution and functioning of the Phillips curve

CO3: To understand the new Keynesian Macroeconomics

CO4: To understand the Monetary rule Equation

CO5: To implement the three equations model to understand the macroeconomy

Module 1: Imperfectly flexible prices (15 Hours)

Price-setting under imperfect competition

Menu costs, real rigidity and neutrality

Quadratic price adjustments

Module 2: New Classical Economics (15 Hours)

The DSGE model.

Wealth Effects and the Government Budget Constraint; money/bond finance The government budget deficit; Ricardian Equivalence

Module 3: New Keynesian Economics (15 Hours)

Disequilibrium, multiple equilibria, hysteresis

Reconstructing the Keynesian multiplier

The NK model of inflation

Module 4: Macroeconomic Policy (15 Hours)

Rules versus Discretion, Credibility & Reputation, Dynamic Inconsistency Banks, Financial Intermediaries and Unconventional Monetary Policy Inflation Targeting and Exchange Rates.

References:

Essential Readings

1. Heijdra, B.J. and F. Ploeg, Foundations of Modern Macroeconomics, Oxford University Press, Oxford, 2002.
2. Romer, D., Advanced Macroeconomics, McGraw-Hill, Fourth Edition, 2012.
3. Wickens, M., Macroeconomic Theory and the Dynamic General Equilibrium Approach, Princeton University Press, 2011.

Development Economics (ECO 108)

When Offered: Semester II

Number of Credits: 4

Preamble: The objective of the course is to introduce students to existing academic approaches that grapple with the complexity of developing countries. To that end, the syllabus presents some of the major economic ideas in development thinking and builds on and extends the microeconomic and macroeconomic tools developed in earlier core courses, additionally incorporating alternative perspectives that merit close scrutiny.

Course outcomes for Development Economics: (ECO 108)

CO1: Understand the process of transformation for developing countries

CO2: Understand the different approaches of development thinking

CO3: Understand the microeconomics of development, sector-wise issues

CO4: Apply the microeconomic and macroeconomic tools for studying development issues

CO5: Analyse the role of institutions in dealing with resource constraints and externalities at the macro level

Module 1: Concepts and measures of Growth and Development (15 Hours)

Developments in economic thought – History, expectations and development - Economic growth and structural change – Capabilities, entitlements and deprivation - Inequality and growth – Measurement of Inequality and poverty- Measurement of development - HDI, GDI, etc.- Role of market and state

Module 2: Modern theories of Growth and Distribution (15 Hours)

Harrod-Domar Model of growth– Solow model of growth- Approaches to technical change – Convergence – Endogenous growth models of Romer and Lucas-Human capital

Module 3: Microeconomics of Development (15 Hours)

Segmentation of rural land, labour, capital and credit markets –microfinance- Market inter- linkages – land markets-labour markets and households–Credit market-microfinance- The household model of fertility decisions- Institutions and development

Module 4: Macroeconomics of Development (15 Hours)

Environment and development- Development and the constraint of natural resources – Environmental problems in Economic Development—Environment and Sustainable Development-Trade and Development – Trade and foreign exchange —Role of international financial and trade institutions – Structural adjustment and stabilization.

References:

Essential Readings

1. Basu, K., Analytical Development Economics, OUP, New Delhi, 1998
2. Ray, D., Development Economics, OUP, New Delhi, 2004

Additional Readings

1. Agénor, P. and P.J. Montiel, Development Macroeconomics, Princeton University Press, 1999
2. Bardhan, P. and C. Udry, Development Microeconomics, OUP, Oxford, 1999
3. Behrman, J.R. and T.N. Srinivasan, Handbook of Development Economics, Elsevier, 1995
4. Foley, D.K. and T.R. Michl, Growth and Distribution, Harvard University Press, 1999
5. Hayami, Y. Development Economics: From the Poverty to the Wealth of Nations, OUP, 2001
6. Human Development Reports (Several Years)
7. Sen, A. Commodities and Capabilities, OUP, New Delhi, 1999

Public Economics (ECO 109)

When offered: Semester II

Number of Credits: 4

Preamble: The focus of the course, which draws on Microeconomic theory, is on the development of analytical tools and their application to key issues relating to the spending, taxing and financing activities of government. References for Module 4 may change from year to year.

Course outcomes for Public Economics (ECO 109)

CO1: Understand key issues relating to spending, taxation and financing activities of government

CO2: Understand theoretical models and analytical tools used to assess key activities of government.

CO3: Apply analytical tools to assess key activities of government.

Module 1: Government in a Market Economy (15 Hours)

Theorems of Welfare Economics: Implications, Lump Sum Taxes and Transfers Rationale for State Intervention: Market Failures and Externalities, Tax and Regulation, Distribution, Social Choice, Voting Rules, Arrow Impossibility Theorem

Module 2: Public Expenditure: Rationale and Evaluation (15 Hours)

Public Goods: Pure and Local, Optimal provision, Lindahl's Voluntary Exchange Approach, Preference Revelation mechanism, Private provision of Public Goods, Merit Goods, Club Goods Evaluation of Government Expenditure: Elements of Cost-Benefit analysis

Module 3: Taxation (15 Hours)

Basic Concepts of Tax Theory: Direct vs. Indirect Taxes, Ability to Pay, Horizontal and Vertical Equity. Commodity Taxation: Tax Rules, Optimal Commodity Taxation, Public Sector Pricing. Income Taxation: Equity and Efficiency, Taxation and Labour Supply, Optimal Income Taxation (linear and non-linear). Tax Evasion: Basic Model, Auditing and Punishment.

Module 4: Reforms and Government (15 Hours)

Fiscal Rules: Rationale, International and Indian Experience. Decentralization: Decentralization Theorem. India's Federal Structure: Taxation powers, Expenditure responsibilities, Intergovernmental transfers, VAT, GST

References:

Essential Readings

1. Atkinson A.B. and J.E. Stiglitz, Lectures on Public Economics, New York: McGraw-Hill, 1980
2. Cullis J. and P. Jones, Public Finance and Public Choice, OUP, 1998
3. Hindriks J. and G.D. Myles, Intermediate Public Economics, MIT Press, 2006
4. Myles G., Public Economics, Cambridge University Press, 1995
5. Oates W., Fiscal Federalism, New York: Harcourt, Brace Jovanovich, 1972
6. Purohit M., Value Added Tax, Gayatri Publications, 2001
7. Tresch R., Public Finance: A Normative Theory, Academic Press, 1995

Basic Econometrics I (ECO 113)

When offered: Semester I

Number of Credits: 2

Preamble: The course is designed to introduce students to elementary econometric methods and their applications. The teaching will emphasize a combination of theory and empirical applications.

Course outcomes for Basic Econometrics (ECO 113)

CO1: Reasonable familiarity with statistical thinking in applying data to problems.

Module 1: Linear Regression Model (15 Hours)

Two variable model:- estimation of parameters, properties of estimators, hypothesis testing and model validation (application only). Extension to multiple linear regression model. Use and interpretation of dummy variables as regressors

Module 2: Classical Assumptions (15 Hours)

Heteroskedasticity, autocorrelation and multicollinearity: implications, corrective measures, Outliers:-implication and detection, non-normality of errors and bootstrapping of confidence intervals

References:

Essential Readings

1. Bhaumik, S K. "Principles of econometrics: A modern approach using Eviews." *OUP Catalogue* (2015).
2. Wooldridge, J., *Introductory Econometrics: A Modern Approach*, Cengage Learning, 2009
3. Kennedy, P., *A Guide to Econometrics*, MIT Press, 2005
4. Stock, J. H. and Watson, M. W. (2011): *Introduction to Econometrics*, Pearson Education Inc.

Basic Mathematics for Economists I (ECO 114)

When Offered: Semester I

Number of Credits: 2

Preamble: This course provides postgraduate economics students with a solid foundations in mathematical techniques essential for economic analysis. The syllabus follows Avinash Dixit's classic approach and covers necessary mathematical background for understanding dynamic optimization. The course emphasizes on the application of mathematical tools to microeconomics, macroeconomics and other applied courses. Students will develop problem solving skills and the ability to model economic questions mathematically.

Course outcomes for Basic Mathematics for Economists I (ECO 114)

- CO1: Demonstrate knowledge and understanding of Mathematical techniques like calculus, matrix algebra and integration to apply to economic theories.
- CO2: Use a mathematical approach in microeconomics, macroeconomics, and all other applied courses.
- CO3: Model economic questions as mathematical problems, demonstrating the ability to formulate and solve them mathematically.
- CO4: Apply creativity and innovation in problem-solving, using mathematical tools to analyze and interpret economic phenomena.

Module 1 (15 Hours)

Elements of set theory: $\mathbb{R}$ and $\mathbb{R}^n$, sequences & limits, open & closed sets, compact sets

Functions: continuity, linear functions, concave and quasi concave functions.

Vectors and matrices: the determinant, the special determinants-Jacobian, Discriminant, Hessian and Bordered Hessian, Eigen Values and characteristic roots.

Module 2 (15 Hours)

The derivative: partial derivatives, implicit differentiation, total derivatives.

Unconstrained and constrained optimization.

Differential Equations: stability analysis.

References:

Essential Readings

1. Chiang, A.C., Fundamental Methods of Mathematical Economics, McGraw-Hill, 2005
2. _Chiang, A.C, Elements of Dynamic Optimization, McGraw-Hill, 1992
3. Simon, C.P. and B. Lawrence, Mathematics for Economists, Viva Books Pvt Ltd, 1994
4. Sydsaeter, K., P. Hammond, and S. Arne, Essential Mathematics for Economic Analysis, Pearson, 2012

Additional Readings

1. Binmore, K., Foundations of Analysis, Books 1 & 2, Cambridge University Press, 1980
2. Dixit, A., Optimization in Economic Theory, Oxford University Press, 1990

Basic Statistics (ECO 115)

When Offered: Semester I

Number of Credits: 2

Preamble: This course aims to familiarize students with elements of probability and inferential statistics that form the basis of modern econometrics. This course is therefore a bridge between the elementary probability that is taught at the intermediate/ undergraduate level and the advanced econometrics that is taught at the postgraduate level.

Evaluation Pattern: Four examinations of ten marks each, to be held after the completion of each module, followed by an end semester examination of sixty marks.

Course Outcome for Basic Statistics (ECO 115)

CO1: The students derive the necessary theoretical background for the core paper on Econometrics

CO2: Ability to design and implement more complex models than the basic linear model to model real-world situations.

Module 1: Probability, Random Variables and Distributions (15 Hours)

Probability theory- Conditional, Marginal and Joint probability Bayes' theorem and its applications. Discrete (Poisson & Binomial) and continuous random variable, probability mass function, probability density function and cumulative density function. Joint, marginal and conditional distribution functions of random variables.

Module 2: Expectation, Theory of Estimation (15 Hours)

Expectation of single and bivariate random variables, and its properties. Conditional Expectations and other moments.

The concept of Estimator-Sampling Distribution of Estimator=Point and Interval Estimation. Hypothesis testing, Null Hypothesis and Alternate Hypothesis, Two tailed and One tailed Hypothesis test, p-value. Normal distribution, t-distribution, Chi-square distribution & F distribution.

References:

1. DeGroot M.H. and Schervish M.J.(2012) : Probability and Statistics, 4th Edition, Addison-Wesley.
2. Diez, David M, Christopher D., Barr, and Mine Cetinkaya-Rundel. Open Intro statistics. Boston, MA,USA.
3. Goon A.M., Gupta M.K. and Dasgupta B. (2002): Fundamentals of Statistics, Vol. I & II, 8th Edn. The World Press, Kolkata.
4. Hogg, R.V., Tanis, E.A. and Rao J.M.(2009):Probability and Statistical Inference. Latest Edn, Pearson Education, New Delhi

Research Methodology (ECO 116)

When Offered: Semester I

Number of Credits: 4

Preamble: The purpose of this course is to introduce post graduate students of economics to the field of research and prepare them in the skills, techniques and knowledge necessary undertake independent research using this methodology. This course will deepen there understanding of the research notions and develop hands on understanding techniques and tools used in this field.

Course Outcome for Research Methodology (ECO 116)

C01: to have essential analytical skills and sufficient knowledge of quantitative methods as well as qualitative methods so as to build research acumen among students.

C02: to enable the students in data collection, presentation, analysis and drawing inferences about various statistical hypotheses.

C03: to introduce the fundamental elements of qualities approach to research which help students to understand and become proficient in the qualitative methods.

Module 1: Introduction (15 Hours)

Introduction- fundamental issues in research- relationship of qualitative and quantitative methods - Philosophy and Ethics- Scientific conduct - Publication ethics- importance of originality - Plagiarism and ethics in writing - Open access publishing- data bases and Research metrics- Publication misconduct.

Module 2: The Special Nature of Qualitative Research (15 Hours)

Requirement in qualitative research- The phases of qualitative studies - the sample in qualitative designs - The nature of data in qualitative research -Research- procedures for designing and setting up a qualitative research study. Conceptual frameworks- Research questions validity in data gathering - Starting a study; entry into the field; role of the researcher ; confidentiality ; collecting background information, Sampling and validity in data gathering- the mixed approach - Mixed models- Mixed methods.

Module 3: Data Collection procedures (15 Hours)

Sampling and Sampling techniques- Survey method- Key techniques for data collections in qualitative research, interview and visual data methods and ways that mobile and online data collection methods are extending these fundamental- types of interviews(structured and unstructured). How to design interview question; how to conduct interviews - taking notes, following up issues, developing a sequence. Types of observation procedures. Focus groups - Design, conduct and analysis of focus group interviews- documents and archival data - definition review of sources and types of data methods of collection and analysis - Integrating and synthesizing data, reflexivity.

Module 4: Representation Writing and presentation (15 Hours)

Basic principles of qualitative analysis- Computer assisted content analysis- The role of hairy in qualitative data analysis- The process of qualitative analysis- Working out the meaning of a text- Analytic induction and grounded theory- Other ways of analysing qualitative data-A concrete example- Completing a qualitative analysis. Writing a report- the importance of originality- writing an outline of the research- transparent presentation: A case study- Analysing and interpreting the data.

References:

1. Brymann, A. (2012): Social Research Methods, Fourth Edition, Oxford University Press.
2. Creswell, J.W. (2007): Qualitative Inquiry and Research Design, Choosing among Five Approaches, Sage Publication, 2007.
3. Denzin, N.K. and Lincoln, Y.S. (ed.) (1994): Handbook of Qualitative and Qualitative Research, Sage, Thousand Oaks.
4. Johnson and Christensen (2004): Educational Research: Quantitative, Qualitative and Mixed Approaches, 2nd Ed. Boston: Allyn & Bacon.
5. Neuman, W.L. (2000): Social Research Methods. Qualitative and Quantitative Approaches (4th Ed.) Boston: Allyn & Bacon.
6. Strauss, A. and Corbin, J. (1994): "Grounded Theory Methodology" in N.K. Denzin and Y.S. Lincoln (ed.) Handbook of Qualitative Research (pp.217-285), Thousand Oaks, Sage Publication.
7. Kurien, C.T. (1973): A Guide to Research in Economics, Madras Institute of Development Studies, Madras Sangam Publishers.

Basic Econometrics II (ECO 117)

When offered: Semester II

Number of Credits: 2

Preamble: The course is designed to introduce students to elementary econometric methods and their applications. The teaching will emphasize a combination of theory and empirical applications.

Course outcomes for Basic Econometrics (ECO 117)

CO1: Using techniques like linear regression and time series models to make inferences and predictions for real-World problems.

Module 1: Systems of equations and Binary dependent variables (15 Hours)

Endogeneity and specification issues, Structural form and reduced form models, identification, instrumental variables and two stage least squares. Binary dependent variables (Logit & Probit Models).

Module 2: Introduction to time series and panel data (15 Hours)

Stationary and non-stationary time series, tests of stationarity, Types of Univariate Time Series Models. Difference between Pooled data and Panel data, Fixed Effects Model and Random effects model

References:

Essential Readings

1. Bhaumik, S K. "Principles of econometrics: A modern approach using Eviews." *OUP Catalogue* (2015).
2. Wooldridge, J., *Introductory Econometrics: A Modern Approach*, Cengage Learning, 2009
3. Kennedy, P., *A Guide to Econometrics*, MIT Press, 2005
4. Stock, J. H. and Watson, M.W. (2011): *Introduction to Econometrics*, Pearson Education Inc.

Basic Mathematics for Economists-II (ECO 118)

When Offered: Semester II

Number of Credits: 2

Preamble: This course provides postgraduate Economics students with a solid foundation in Mathematical techniques essential for Complex economic analysis. This syllabus follows Avinash Dixit's classic approach and covers then necessary mathematical background for understanding dynamic Optimisation. The course emphasizes the application of mathematical tools to microeconomics, macroeconomics and other applied courses. Student will develop problem solving skills and the ability to model economic questions mathematically.

Course outcomes for Basic Mathematics for Economists-II (Eco 118)

- C01: demonstrate knowledge and understanding of mathematical techniques including calculus Matrix Algebra and integration and apply them to economic theories.
- C02: utilise mathematical approaches in Microeconomics, Macroeconomics and other applied economic courses.
- C03: model economic questions as mathematical problems, demonstrating the ability to formulate and solve them mathematically.
- C04: apply creativity and innovation in problem solving, using mathematical tools to analyse and interpret economic phenomena.

Module 1: Static Optimisation (15 Hours)

Integration- definite and indefinite integrals, integration by parts, Consumer's and Producer's surplus Gini Coefficient, Learning curve
Concave programming, the Kuhn-Tucker theorem, One constraint and two constraint problems.

Module 2: Dynamic Optimisation (15 Hours)

Calculus of variations
The Maximum principal,
Dynamic programming.

References:

1. Chiang, A. C., Fundamental Methods of Mathematical Economics, McGraw-Hill, 2005.
2. 2005.
3. Chiang, A.C., Elements of Dynamic Optimisation, McGraw-Hill, 1992.
4. Simon, C.P. and B. Lawrence, Mathematics for Economists, Viva books Private Limited, 1994.
5. 1994.
6. Hoy, M., Livernois, J., McKenna, C., Rees, R. and Stengos, T., PHI, 2006.
7. Sydaster, K.P. Hammond, and S. Arne Essential Mathematics for Economic Analysis, Pearson 2012.
8. Binnore, K., Foundations of Analysis, Books 1&2, Cambridge University Press, 1980.
9. Dixit, A., Optimization in Economic Theory, Oxford University Press, 1990.

Advanced Microsoft Excel for Research in Economics (ECO 119)

When Offered: Semester II

Number of Credits: 2

Preamble: This course is designed to provide post graduate economics students with advanced skills in utilising Microsoft Excel for conducting research in economics. Students will learn a variety of Excel functions Tools and techniques specifically tailored to the needs of economists. The course will focus on data management visualization and modelling, enabling Students to effectively handle large data sets, conduct statistical analysis, and present their findings professionally. Emphasis will be placed on Real world economic applications and research scenarios.

Course outcomes for Advanced Microsoft Excel for Research in Economics (ECO 119)

C01: Demonstrate proficiency in advanced Excel functions and tools relevant to economic research.

C02: Manage and clean large data sets efficiently for economic analysis.

C03: Conduct basic statistical analysis using Excel.

C04: Understand the importance of data visualisation and its role in conveying insights.

C05: Identify appropriate visualization types for different types of data and analysis goals.

C06: Create visually appealing charts, graphs and dashboards using Excel.

This course will be conducted over 30 hours consisting of lectures and hands on exercises and assignments.

Module 1: (15 Hours)

Introduction to advanced Excel functions for economic research- Overview of Excel functions relevant to economics data cleaning and validation. Managing and analysing last data sets- Importing and exporting data from different sources, sorting, filtering, conditional formatting V lookup, Pivot tables for summarizing and analysing data , statistical analysis in Excel. Descriptive statistics and summary measures hypothesis testing and confidential intervals, correlation and regression analysis. Time series analysis handling time series in data Excel forecasting techniques seasonal adjustments and trend analysis.

Module 2: (15 Hours)

Introduction to data visualisation and Excel importance of data visualisation overview of Excel tools for visualisation introduction to design principles and visual perception. Creating basic charts in Excel- Bar charts column charts and line charts, Pie charts and doughnut charts, Scatter plots and bubble charts. Advanced Charts types in excel- Area charts and stacked charts, Radar charts, waterfall charts, Box plots and histograms. Pivot tables and Pivot charts- Introduction to Pivot tables and Pivot charts summarizing and analysing data with Pivot tables, Creating dynamic Pivot charts Interactive dashboards in excel- Designing interactive dashboards, Slicers and timelines for inter activity creating drop -down menus and dynamic charts.

References:

1. Schult, C., Excel for Economists: Data Analysis, Visualization & Modeling.
2. Middleton, M. R., Data Analysis using Microsoft Excel updated for office 365.
3. Soulakis, N. J. Mastering Excel for Business Analysis: An Introduction to Data Modelling.
4. Sargent, T. J. and Stachurski, J. Quantitative Economics with Python (includes examples using Excel for economic analysis).
5. Knafllic, C. N. (2015), Storytelling with data: A Data visualization Guide for Business Professionals, Wiley.
6. Healey, K. (2018) Data Visualization: A Practical Introduction, Princeton University Press.
7. Alexander, M. (2013). Excel Charts and Graphs: Essential Guide for Creating Powerful Data Visualizations.
8. Evergreen, S, Effective Data Visualisation: the Right Chart for the Right Data.
9. Few, S, Information Dashboard Design Displaying Data for At a Glance Monitoring.
10. Hector Guerrero, Excel for Data Analysis Basic to Advanced.
11. Hector, Guerrero, Excel Data Analysis Modelling and Simulation.
12. Alastair L. Day, Mastering Financial Mathematics in Microsoft Excel a Practical Guide to business calculations.
13. Brian C Williams, Visualizing Data with Microsoft Excel.
14. Danielle Stein Fairhurst, Financial Modelling in Excel for Dummies.
15. Michael Alexander and John Walkenbach, Excel Dashboards and Reports for Dummies.

Introduction to Data Analytics (ECO 120)

When Offered: Semester III

Number of Credits: 2

Preamble:

Data Analytics/data analysis is a microcosm within a single thread that runs through data design, collection, modelling, consolidation, clean-up, visualization and analysis.

Course Objectives of Introduction to Data Analytics (ECO 120)

CO1: Provide students with knowledge of the basics of data analysis and the deriving of insights from data.

CO2: Enable conceptual clarity and practical applications of tools such as Microsoft Excel (Power BI)/Tableau.

Module 1: Introduction to Data Analytics (15 Hours)

Definition of Data analysis/analytics - interplay of variables in a dataset: single and multiple categorical variables, univariate, bivariate and multivariate analysis, grouping of a number variable – Scoring of a numeric variable and setting up score card using multiple variables – Pareto Analysis.

Module 2: Data Wrangling & Visualization (15 Hours)

Introduction to SQL: Basic concepts of relational database, introduction to CRUD operations on databases, querying an SQL database - Data cleaning and preprocessing - Data Import and Export with Pandas (from Excel into Pandas data frames) - Handling Missing Data –Visualisation using Power BI/Tableau

References

1. Klemens, B. (2014), Modeling with Data: Tools and Techniques for Scientific Computing, First Edition, Princeton University Press, U.S.A.
2. Gentle, J.E. (2009), Computational Statistics, Third Edition, Springer.
3. Givens, G.H. and J.A. Hoeting (2013), Computational Statistics, Second Edition, Wiley.

Basics of Python (ECO 121)

When offered: Semester III

Number of Credits: 2

Preamble: The course is an Introduction to the basics of python programming.

Course outcome for Basics of Python (ECO 121)

CO1: Enable the students to get hands-on experience in data handling using python

Module 1: Introduction to Python (15 Hours)

Basic functionalities: Elementary mathematical operations, Data types and use, Importing datasets. Data cleaning and variable creation: Dealing with missing values, Dealing with outliers, Rescaling/ normalisation/ winsorisation/ normalisation of data, Dealing with categorical variables, Basic graphs: Line chart, Bar plot, Kernel density plot. Application of if-else functions and loops, exporting output from Python

Module 2: Python for data analysis (15 Hours)

Web scraping using Selenium: Collecting non-structured data, Understand support functions like time. sleep, try catch, etc. Reading simple and complex captcha. Dashboard making in Python: Creating a basic interactive dashboard in Python. Advanced Graphics in Python: Geospatial maps - For example, plotting night lights data for cross country analysis. Choropleth maps. Causal estimation: Applying difference in differences in Python

References:

1. Matthes E, "Python Crash Course", No Starch Press; 2nd edition (3 May 2019).
2. McKinney W, "Python for Data Analysis", O'Reilly Media; 2nd edition (21 October 2017).
3. Hilpisch Y, "Python for Finance", Shroff/O'Reilly; Second edition (28 February 2019).
4. Alpaydin A, "Introduction to Machine Learning" Prentice Hall India Learning Private Limited; 2nd edition (1 January 2010)

Websites: GeeksforGeeks, DataCamp

Introduction to R (ECO 122)

When offered: Semester III

Number of Credits: 2

Preamble: The course is an application of the Basic Econometric I taught in Semester I & II. The teaching will emphasize on empirical applications.

Course outcomes for Introduction to R

CO1: Enable the students to get hands-on experience in estimation of linear regression models using R.

Module 1: Introduction to R (15 Hours)

Introduction to R Syntax, Installation of R and R-Studio, Working with R, Understanding Help Command, Matrix operations, Data Management in R, R graphics, Exploratory data analysis with R.

Module 2: Linear Regression & Inference (15 Hours)

Simple Linear Regression in R, Multiple Linear Regression (with time series data and cross section data) in R, Regression Diagnostics, Diagnostic Tests, Robust Standard Errors and Tests, Unit root tests.

References:

1. Kleiber C. & A. Zeileis, Applied Econometrics with R, Springer (Latest Edition)
2. Athreya S, D Sarkar and S Tanner, Probability and Statistics with Examples using R. (Available at <https://www.isibang.ac.in/~athreya/psweur/>)

Agricultural Economics (ECO123)

When Offered: Semester IV

Number of Credits: 4

Preamble: The course aims to enhance the students understanding of agricultural economics, production function, various issues and types in agriculture. Starting from production, factors, products, problems of sustainability and changing perspectives. The course tries to augment students' awareness on climate change and instability in production, the functioning of imperfections in credit markets, current issues of the agricultural sector and way forward.

Course Outcomes for Agriculture Economics (ECO 123)

C01: The course will enable students to understand the production function relationships in the agricultural sector and current agricultural issues and trends.

C02: This course provide knowledge to students about; sustainable agricultural development and the way forward.

C03: This course enhances knowledge of agricultural credit supply, issues and measures.

C04: The course enables the students to understand the agricultural market issues and changing perspectives.

Module I: Agricultural Production (15 Hours)

Production Function Analysis in Agriculture- Factor-Production Relationships. Product Supply Response in Agriculture. Demand For Farm Products- Income Elasticity and Cross Elasticity of Demand for Farm Products. Agricultural Growth Analysis in India, Crop Pattern Analysis and Its Changing Perspective in India, Imperfections in Product and Input Markets in Agriculture.

Module II: Sustainable Agriculture Development and New Methods (15 Hours)

Concept of Sustainable Agricultural Development and Global Measures - New Methods of Cultivation: Cooperative Farming, Contract Farming, Integrated Farming, Precision Farming, Organic Farming, Natural Farming and Success Experiments. Impact of Climate Change on Agricultural Productivity- Analysis with Reference to Major Crops.

Module III: Agricultural Credit Supply and Issues (15 Hours)

Needs of Agricultural Credit; Types, Productive and Unproductive Credit, the Problem of Agricultural Finance, Farmer's Indebtedness- Causes, Evils and Remedial Measures. Institutional and Non-Institutional Sources of Agricultural Credit, Radhakrishna Committee Report, Role and Credit Performance of Commercial Banks, Co-Operative Banks, Regional Rural Banks, NABARD and Microcredit through SHGs tn India. Vaidyanathan Committee Report.

Module IV: Agricultural Market: Issues and Challenges (15 Hours)

Concept, Structure and Types of Agricultural Markets, Marketable and Marketed Surplus, Causes of Low Marketable Surplus in India, Problems of Agriculture Marketing In India, Model APMC Act 2003, National Agriculture Market (eNAM) Agrarian Pricing Policy, MSP Challenges, Problems and Remedial Measures.

References:

1. Heady Earl O., Economics of Agricultural Production and Resource Use, Prentice Hall, New York, 1961.
2. H.V. Nagesh, Forms of Unfree Labour in Indian Agriculture.
3. Daniel and Alice Thorner, Types of Employer- Labourer Relationships in Indian Agriculture.
4. K. Subbarao, Agricultural Marketing and Credit, ICSSR.
5. The Hindu (2006): Survey of Indian Agriculture 2006. New Delhi
6. Bansil, B. C. (1975): Agricultural Problems of India, Delhi.
7. Dr K Venkata Reddy: Agricultural and Rural Development, Himalaya Publication House, Delhi.
8. Economic and Agriculture Surveys: Government of India, Ministry of Agriculture
Department of Agriculture and Cooperation, Directorate of
Economics and Statistics New Delhi.
9. Mellor John W., The Economics of Agricultural Development, Cornell University Press, New York.
10. M. L. Dantwala et al, Indian Agricultural Development Since Independence: A Collection of Essays, Oxford and IBH Publishing Company, New Delhi.
11. S. Narayan, Organic Farming in India: Relevance, Problems and Constraints, NABARD Occasional Paper 38.
12. Singh, Sukhpal, Political Economy of Contract Farming In India.
13. Indian Agriculture after the Green Revolution Changes and Challenges, edited By Binoy Goswami, Madhurjya Prasad Bezbaruah, Raju MandalLink.
14. <https://www.routledge.com/Indian-Agriculture-after-the-Green-Revolution-Changes-and-Challenges/Goswami-Bezbaruah-Mandal/p/book/9780367374839>

International Economics (ECO 124)

When Offered: Semester IV

Number of Credits: 4

Preamble: This core paper is offered in the fourth semester of the course, requires a good understanding of both basic Microeconomics and Macroeconomics. The course aims at providing a theoretical exposition of basic trade theories, approaches, Policies, and dynamics of economic integration.

Course Outcomes for International Economics

C01: This course is expected to give the students a clear understanding and familiarity with the classical theories of trade and analyze the neo-classical and modern theories.

C02: The students would also get an insight into the trade policies followed by developed and emerging Economies.

C03: To understand the basics of International finance w.r.t. foreign exchange and balance of payments Approaches.

Module 1: Introduction and Classical Trade Theory (15 hours)

Introduction- Globalization; International flow of goods, services and factors; changing pattern of International trade; International economic problems and challenges; Trade and Development

Classical Trade Theories- Adam Smith- Absolute Advantage; Ricardo- Comparative Advantage of Trade; Real and Opportunity Cost Approaches; Gains from Trade; Reciprocal demand and Offer Curves; Terms of Trade

Module 2: Neo-Classical and Modern Trade Theory (15 hours)

Neo-classical: The Heckscher-Ohlin (H-O) Theory; Factor Price Equalization Theorem; Leontief Paradox; Rybczynski Theorem; Trade and Growth

Modern Theory: Concept and measures of Intra-industry Trade; Imperfect Competition and Trade- The Neo-Heckscher-Ohlin Models- Favley Model; Oligopolistic Models- Brander-Krugman Model, Reciprocal Dumping Model- Iceberg Model.

Module 3: Trade Policy (15 Hours)

Free Trade v/s Protectionism; Instruments of Trade Policy-Tariffs, Tariffs and Welfare, The Stolper-Samuelson Theorem, Metzler's Paradox, Optimum Tariff; Non-tariff Trade Barriers and Neo Protectionism- Quotas and Export subsidies, Voluntary Export Restraints, Dumping and Anti-Dumping- Countervailing Duty.

Module 4: International Finance (15 Hours)

Foreign Exchange Rates: Fixed, Flexible, Nominal, Real and Effective Exchange Rates, Purchasing Power Parity and Interest Parity. Foreign Exchange Markets: Spot, Forward, Futures and Options Currency Markets.

Balance of Payments: Current Account Balance and Capital Account Balance, Approaches to Balance of Payments Adjustments: Elasticity, Absorption, Monetary and Portfolio-balance Approaches.

References:

1. Salvatore D., International Economics, John Wiley and Sons, Singapore, 2002 (All Modules).
2. Södersten Bo and R. Geoffrey, International Economics, Macmillan, London, 1994.
3. Krugman P. R. and M. Obstfeld, International Economics-Theory and Policy, Addison-Wesley, Delhi, 2000.
4. Bhagwati, J. N. (1998). *International Trade: Selected Readings*. London: MacMillan University Press.
5. Pugel & Lindert (1999), *International economics*, 11th edition, Irwin/McGraw-Hill, December 13.

Application of ML for Economists (ECO 125)

When offered: Semester IV

Number of Credits: 2

Preamble: This course comprises of the study and application of basic Machine Learning algorithms used by data analysts and economists. The aim of this course is to provide students with the essential skills and knowledge needed to work in the expanding field of data science.

Course outcomes for Application of ML for economists: The focus of this course would be to acquaint students with regression and classification-based ML algorithms that are commonly used by data and analytics firms in the corporate sector.

CO1: Familiarize students with basics of regression and classification models within the domain of Machine Learning

CO2: Keep students abreast of the latest developments in the data and analytics domain and prepare them for the demands of the job market.

Prerequisite: Basic knowledge of R programming

Module 1: Classification models: (15 Hours)

Introduction to Machine Learning, Data collection and cleaning, Feature extraction and selection, Classification models- Logistic, Decision trees and Random forests, Gradient Boosting Mechanism (GBM), Model diagnostics

Module 2: Regression models: (15 Hours)

Regression models - Simple and multiple linear regression, Decision tree and random forest regressions, Model diagnostics, Model Usability and Governance - Model deployment, Post deployment analysis, Reporting, Monitoring the precision of the results, Model retuning and model rebuilding.

References:

Lantz, Brett. (2019). Machine learning with R: expert techniques for predictive modeling. Packt publishing ltd.

Introduction to Stata (ECO 126)

Number of Credits: 02

Duration: 30 hours

Pattern of Evaluation: Standard

Preamble

Stata is the most widely used software for analysing cross-sectional and longitudinal data by econometricians and health researchers. This course will introduce the basics of Stata to the students and enable them to use the software to manage, explore and inspect the data structure and pattern using various summary statistics and visual display techniques. Toward the end, students will be able to explore various bivariate and multivariate relationships inherent and hidden in the data using various linear and non-linear models.

Course Outcomes:

1. Students will learn how to handle and manage their own data sets using Stata.
2. Students will learn how to explore the data using various summary measures and graphical tools and find the trend and pattern hidden in the data.
3. Students will be able to explore various bivariate and multivariate relationships across variables within their dataset by using widely used linear and non-linear statistical and econometric modelling.

Module 1 (15 hours)

Data Management: Creating new data set - Logical operators and qualifiers - Using function - Conversion between numeric and string formats - Creating categorical and ordinal variables - Importing and exporting data - Merging and appending data files - Generating random variables and drawing random samples - Creating logfile, do file and writing programme for data management

Summary Statistics: Basic summary commands for numerical and categorical variables - Tables of mean, median and other summary statistics - Frequency tables and two-way cross tabulations - Multiple tables and multi-way cross-tabulation

Learning Graphical Tools: Histogram - Box plot - Pie chart - Bart chart - Dot plot - Line plots and connected line plots - Scatter Plot - Other two-way plots - Symmetry and other quantile plot - Graphing with do files, saving and retrieving the graphs

Module 2 (15 hours)

Linear Regression Analysis and Diagnostics: Basic regression commands - Regression table - Dummy variables - Multiple regression - Predicted values and residuals - Basic graphs for regression - Correlation - Hypothesis tests - Multicollinearity - Diagnostic plots, tests and statistics

Logistic Regression: Data description for logistic regression - Estimating logistic regression - Marginal and average effects - Conditional effect plots - Diagnostic statistics and plots - Ordered and multivariate logistic model estimation - Simple, ordered and multivariate probit model estimation

Transportation Economics - Theory and Practice (ECO 201)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: In this course, the tools of microeconomic analysis will be applied to the transport sector. We will build on theories and concepts developed in the microeconomics courses and we will show how extensions of the theory can deal with the idiosyncrasies of the transport sector. For example, the concept of “price” is generalized to include the value of time to the traveller. The demand for transporting freight is explained using the theory of the derived demand for an input. At the same time, the impact of modern approaches to management (logistics) would be considered. Just as the concept of “price” requires modification, we will see that “output” has many dimensions and explore the implications of this. In particular, we will examine the cost complexities exhibited in the transport sector and the need to modify pricing principles accordingly. The transport sector is very rich in terms of applications of concepts such as price discrimination and social cost-benefit analysis. In addition, a study of transport economics would also involve the application of microeconomics in the analysis of policies, especially in relation to appropriate ways to regulate firms. The course generally covers the relationship between transport and the economy. Basically, the course has been designed to apply economic concepts in a practical setting and illustrate them using case studies especially chosen from the Indian context to provide important insights into the economics and management of different parts of the transport sector.

Pre-requisites: The stated prerequisites for the course are: Introduction to Microeconomics and Introduction to Macroeconomics. A reasonable background in basic Algebra and Calculus is needed. Some of the mathematics may be reviewed in class if required.

Course outcomes for Transportation Economics - Theory and Practice (ECO 201)

- CO1: Demonstrate knowledge and understanding of Economic appraisal and evaluation methods and their application to transport investments in developing and developed countries.
- CO2: Secure knowledge of economic theory as applied to transport, including demand, supply and pricing theory and practice.
- CO3: Learn the links between transport and the wider economy, including on the location and level of economic activity.
- CO4: Utilize demand, supply and pricing theory and elasticities in economic analysis, using both graphical and numerical analysis.
- CO5: Assess issues relating to transport funding, road pricing and the pricing of public transport.

Module 1: Introduction (12 Hours)

Transport as a catalyst to development; measuring the impact of transport on the economy- case studies of impacts. An overview of transportation activities in India: network and performance; issues for the future. Some basic considerations: transportation and land use, the transport planning process

Module 2: Demand and Supply Analysis (12 Hours)

Transport Demand: The Basic Framework- measuring the demand in a spatial and temporal setting. Traditional Four-Stage Demand Model; modern approaches to modelling demand and practical issues in demand estimation. Supply: the nature of output in transport, output and costs, economies of size, density and scope, empirical estimation of transport cost functions- the approaches and illustrations.

Module 3: Market Structure and Pricing (12 Hours)

The spectrum of transport market structures: market power and the scope for pursuing different strategies. Pricing Principles – First Best Rules, Ramsey Pricing – Second Best Solution, Price Discrimination, Pricing with Stochastic Demand, Road Pricing and Congestion. Pricing in practice – public transport fares, rail tariffs, pricing by shipping conferences and electronic road pricing schemes

Module 4: Investment Decisions (12 Hours)

The nature of investment decisions; financial evaluation of transport investments; social cost-benefit analysis: economic evaluation of transport investments. The practical issue in evaluation and case studies of road and rail projects evaluation.

Module 5: Market Regulation and Policy (12 Hours)

Theory of Regulation, Deregulation and Privatisation in Transport. Approaches to privatization of transport infrastructure and services and a competition policy for transport. Evolution of transport policy in India with a focus on case studies regarding different modes.

References:**Essential Readings**

1. McCarthy, P. S., Transportation Economics, Massachusetts: Blackwell Publishers. 2001(All Modules)
2. Button, K. J., Transport Economics, Second edition, London: Heinemann. 1993 (All Modules)

Additional Readings

1. Boyer, K. D., Principles of Transport Economics, Massachusetts: Addison-Wesley, 1998.
2. Cole, S., Applied Transport Economics: Policy, Management and Decision Making, London: Kogan Page, 1998.
3. Winston, C., Conceptual Developments in the Economics of Transportation: An Interpretive Survey, Journal of Economic Literature, Vol. XXIII (March 1985), pp.57-94

Urban Economics (ECO 202)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: This course is designed as a preliminary level course. The learning objective here is to acquaint the underlying theories, propositions and issues that usually arise in studying an urban situation. The course will equip the student with the basic theoretical premises and analytical tools (borrowed from the standard Micro and Macroeconomics) that are used by an urban economist. The course, therefore, is not necessarily grounded in any particular reality (except where explicitly mentioned). However, for pedagogical purposes, explanations and illustrations will naturally come from the Indian situation. It is recommended (although not strictly mandatory) that this course be taken as a pre-requisite for any of the other electives being offered in the area of Urban Economics.

Course outcomes for Urban Economics (ECO 202)

C01: Familiarize the theoretical tools (concepts and theories) that are relevant to urban spaces

C02: Understand the importance and nuances of urban spaces, especially in India

C03: Application of theoretical precepts to issues in urbanization

C04: Understanding of urbanization process/ dynamics in India

C05: Understanding Decentralization (73rd & 74th CAAs) and evaluating the implementation

Module 1: Urban Forms (15 Hours)

Historical evolution of urban forms—definition, rationale and modern related types (UA). Agglomeration – productivity increases, models of optimal city size and regional dispersal. City functions and size class

Module 2: Within the City (15 Hours)

Location of Economic Activities, Land use patterns – classical models and modern reality, regulation land ceiling and rent control. Labour Markets– nature, informalisation. Migration, Urban poverty, Environment

Module 3: Local Public Goods and Infrastructure (15 Hours)

Nature of Local Public Goods and Utility Pricing – water/sanitation, health and education. Power, Housing and Transportation infrastructure. Slums and rehabilitation – Urban infrastructure needs and finance

Module 4: Governance (15 Hours)

Municipal governments – sources of revenues (local taxes) and expenditure. Functions and budgets in a decentralized set up. Governance Issues – capacity building and the role of civil society

References:

1. O'Sullivan, A., Urban Economics, McGraw-Hill Irwin, 2002 (BASIC TEXT All Modules)
2. Shukla, V., Urbanization and Economic Growth, Himalaya Publishers Pvt. Ltd., Mumbai, 1996 (Modules 1, 2)
3. Bahl, R and J. Linn, Urban Public Finance in Developing Countries, OUP (WB), 1992 (Modules 3, 4)
4. Ramachandran, R., Urban Economics and Urban Systems in India, OUP, 1989 (Module 1)

International Trade: Theory and Policy (ECO 203)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: This elective course, to be offered in the third semester, requires a good understanding of Microeconomics. The course aims at providing a theoretical exposition of bases, effects and restrictions on the free flow of international trade with empirical evidence.

Course outcomes for International Trade: Theory and Policy (ECO 203)

CO1: The course will acquaint the students with the basics of international economics

CO2: It will provide a theoretical exposition of bases, effects and the restrictions on free flow of international trade

CO3: Students will get further insights into the models using the empirical evidence.

Module 1: Classical Trade Theory (15 Hours)

Absolute and Comparative Advantage of Trade; Real and Opportunity Cost Approaches; Gains from Trade, Reciprocal Demand and Offer Curves; Terms of Trade. Revealed Comparative Advantage

Module 2: Neo-Classical Trade Theory (15 Hours)

The Heckscher-Ohlin (H-O) Theory; Factor Price Equalization Theorem and Generalization to n Factors and Goods; Leontief Paradox, Rybczynski Theorem; Trade and Growth

Module 3: Modern Trade Theory (15 Hours)

Concept of Intra-industry Trade, Imperfect Competition and Trade- The Neo-Heckscher-Ohlin Models- Favley Model, Neo-Chamberlinian Models- Krugman Model, Oligopolistic Models- Brander-Krugman Model, Reciprocal Dumping Model- Iceberg Model. Gravity Equation. Empirical work in Intra-industry Trade-Balassa Index, Grubel-Lloyd Index, Aquino Index. Trade in Services

Module 4: Trade Policy (15 Hours).

Instruments of Trade Policy; Tariffs and Welfare, Optimum Tariff, Tariff and Real Rewards to Factors of Production, The Stolper-Samuelson Theorem, Metzler's Paradox, Theory of Customs Union, Quotas and Export Subsidies. Gains from Trade and Regional Agreements

References:

Essential Readings

1. Feenstra R. C., Advanced International Trade- Theory and Evidence, Princeton University Press, Princeton, 2004 (Modules 2, 3 and 4)
2. Grimwade Nigel, International Trade, (Second Edition), Routledge, London, 2001 (Modules 3 and 4).
3. Grubel H. G. and P. J. Lloyd, Intra-industry Trade, Macmillan, London, 1975 (Module 3)
4. Haberler G., A Survey of International Trade Theory, International Finance Section, Department of Economics, Princeton University, 1961 (Module 1)
5. Krugman P. R. and M. Obstfeld, International Economics-Theory and Policy, Addison-Wesley, Delhi, 2000 (Modules 2 and 3)
6. Salvatore D., International Economics, John Wiley and Sons, Singapore, 2002 (All Modules)
7. Södersten Bo and R. Geoffrey, International Economics, Macmillan, London, 1994 (Modules 2, 3 and 4)

Gender Economics (ECO 204)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: This elective integrates a gendered perspective into the process of economic theorizing, the attempt being to enable students to evolve a construct in the context of gendered analysis and alternatives as located in the empirical functioning of the economy. Also examined is the role of women in various economic and also extra-economic spheres, incorporating an evaluation of relevant policies as applicable in different sectors. While cross-country analysis is in-built, the focus is on Indian processes and policies located within an international perspective. Non-Standard Evaluation Pattern: The evaluation will be done through 40 marks of continuous evaluation and a 60 marks end-semester examination. The 40 marks of evaluation will consist of a mid-term examination of 20 marks (two questions to be attempted over one hour) and a project of 20 marks on Modules 3 and 4. The project topics will be announced by the 4th teaching week of the semester and the projects should be in by the 10th teaching week. All modules will carry equal weight for the three-hour end-semester examination.

Course outcomes for Gender Economics (ECO 204)

CO1: Have a gendered perspective of economics

CO2: Understand relevant policies in different sectors

CO3: Understand the importance of gender perspective in mainstream economics

CO4: Understand the role of Gender economics in economic growth and development

CO5: Understand and analyse the heterogeneity of labour, and hence their valuation.

Module 1: Introduction to Gender Economics (15 Hours)

Exploitation versus oppression – Access and control over economic resources – Patriarchy and development – Approaches to developmental theories – Contribution of women to national income and economies – Indicators of development – Gender Development Index and Gender Empowerment Measure – Visibility of women and biases inherent in data systems – Limitations of National Income statistics.

Module 2: Conceptualization of Work and Employment (15 Hours)

Concept of 'Homo Oeconomicus' – Market and non-market economies – Work, productivity, efficiency and skill – Valuation of unpaid, underpaid and paid work – Time allocation studies – Concept of head of the household – Occupational trends and patterns – Organised and unorganised labour market structures – Impact of globalization – Land rights and land reforms – Women in collective bargaining – Application and impact of sectoral labour legislation

Module 3: Demographic, Nutrition and Health Profile (15 Hours)

Demographic structures in developed and developing economies – Differentials in sex-ratio, mortality, morbidity, and life-expectancy – Economic determinants of population policies – Intra-household inequalities of access to health and nutrition – Energy expenditure and nutritional deficiency – Food security – Efficiency and equity of health delivery systems

Module 4: Women in the Developmental Process (15 Hours)

Plan approaches to gender issues – Methods and critique of gender budget analysis – Strategies, policies and programmes for poverty alleviation and economic empowerment – Micro-finance, Self-Help Groups, etc. – Gendering macroeconomic perspectives, approaches and methodologies – Fiscal and monetary policies – Issues of trade, investment and subsidies in the international and national context.

References:

Essential Readings

1. Alexander, P. and S. Baden, Glossary on Macroeconomics from a Gender Perspective, Sussex, 2002
2. Barker, Drucilla and E. Kuiper (eds), Towards a Feminist Philosophy of Economics, Routledge, 2004
3. Blau Francine, M. Ferber, and A. Winkler, Economics of Men, Women and Work, Pearson, 2001
4. Haq, Mahabub Ul, Report on Human Development in South Asia- A Gender Question, OUP, Mumbai, 2000
5. Jacobsen, J.P., Economics of Gender, Blackwell, 2007.
6. Kabeer, Naila, Reversed Realities: Gender Hierarchies in Development Thought, Kali, New Delhi, 1994.
7. Krishnaraj, M., R.M. Sudarshan and A. Shariff, Gender, Population and Development, Oxford, Delhi, 1999.
8. Kuiper, E., et.al. (eds), Out of the Margin, Routledge, 1998.
9. Olson, P. and Z. Emami, Engendering Economics, Routledge, 2002.
10. Peterson, J. and M. Lewis (eds), The Elgar Companion to Feminist Economics, Edward Elgar, 2001.
11. Tinker, I., Persistent Inequalities, Oxford University Press, Oxford, 1990.

Economics of Human Development (ECO 205)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: This course on the Economics of Human Development focuses on the widely-accepted global perspective of viewing development as the expansion of people's capabilities, capacities and choices. This people-centric analytical framework for designing and assessing public policy interventions has several implications at macro, meso and micro levels both nationally as well as internationally. This elective has a relatively strong applied component specifically in relation to India that is in-built into each module.

Course outcomes for Economics of Human Development (ECO 205)

- CO1: Understand global perspective of viewing development as the expansion of people's capabilities, capacities and choices.
- CO2: Analyze the framework for designing and assessing public policy interventions at macro, meso and micro levels both nationally as well as internationally for human development.
- CO3: Apply methods and techniques of analysis specifically in relation to India performance in human development that is in-built into each module.

Module 1: Concepts of Human Development (15 Hours)

Growth and Development compared – Perspectives on development – Definition of human development - Basic Needs Approach – Quality of Life Approach – Capability Approach – Human rights – Millennium Development Goals

Module 2: Dimensions of Human Development (15 Hours)

Empowerment, equity, sustainability, security, productivity and participation – Role of freedoms in promoting human development -- Multi-dimensionality of poverty – Concept of inclusive growth – Role of civil society, NGOs, and people's organizations – Obstacles to inclusive growth – Impact of globalization

Module 3: Measurement (15 Hours)

Need for indices - GDP – Physical Quality of Life Index (PQLI), Disability Adjusted Life Years(DALY), Social Capability index – Human Development Index – Human Poverty Index – Gender Related Development Index – Gender Empowerment Measure

Module 4: Aspects of Human Development (15 Hours)

Livelihoods – Inequalities – Gender – Child labour – Aging population – Poverty alleviation - Food Security – Environment – Displacement – Indigenous groups – Migration - Education and Health – Workers and Informal Sector -- Social Security – Human security – Conflict.

References:

Essential Readings

1. Chelliah Raja J and R. Sudarshan (ed), Income Poverty and Beyond: Human Development In India, UNDP, Social Science Press, New Delhi, 1999
2. Comim F, M. Qizilbash and S. Alkire (eds), The Capability Approach: Concepts, Measures and Applications, Cambridge University Press, Cambridge, 2007
3. Costanza R, B. Low, E. Ostrom and James Wilson (ed), Institutions, Ecosystems and Sustainability, Lewis Publishers, Boca Raton, 2001
4. Dev S. Mahendra, P. Antony, V. Gayathri, and R P Mamgain, Social and Economic Security in India, Institute for Human Development, New Delhi, 2001
5. Fukuda-Parr S. and Shiva Kumar A K (ed), Readings in Human Development: Concepts, Measures and Policies for a Development Paradigm, Oxford University Press, New Delhi, 2003
6. Grinspun, A. (ed), Choices for the Poor, Lessons from National Poverty Strategies, UNDP, New York, 2001
7. International Labour Organization, A Fair Globalization: Creating Opportunities for All, World Commission on the Social Dimension of Globalization, Geneva, 2004
8. International Labour Organization: World Employment Reports
9. Meier G M and Stiglitz J E (eds), Frontiers of Development Economics, Oxford University Press, New York, 2001
10. Sen Amartya, Development as Freedom, Oxford University Press, New Delhi, 1999
11. Sen Amartya and Jean Dreze, India: Economic Development and Social Opportunity, Oxford University Press, New Delhi, 1998
12. United Nations Development Programme (UNDP), Human Development Reports 1990- 2004, Oxford University Press, New York
13. United Nations Development Programme (UNDP) – India, State Human Development Reports, 2003 – 2006, Oxford University Press, New Delhi.

Theory & Practice of Regional Trading and Monetary Arrangements (ECO 206)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: Regional/ preferential trading arrangements are increasingly becoming important. The course aims at studying in detail the theory underlying and the issues related to both regional trading and regional monetary arrangements. The course purports to apply econometric techniques in the form of gravity models to the study of regional arrangements. The pedagogy in the first two modules will rely on detailed study of selected chapters from the first two indicated references. Two real-world regional arrangements will be examined in detail in the last module, which may be tested, as a part of internal continuous evaluation, through a project on RTA/RCA.

Course outcomes for Theory & Practice of Regional Trading and Monetary Arrangements (ECO 206)

CO1: Highlight the importance of regional/ preferential trading arrangements.

CO2: Understand the theoretical underpinnings of regional trading and regional monetary arrangements.

CO3: Study the empirical issues of regional trading and regional monetary arrangements by focusing on two real world regional arrangements.

Module 1: Customs Union Theory (20 Hours)

Levels of economic integration – trade creation and trade diversion - economies of scale and customs union – intra-industry trade and customs union – customs union and terms of trade - customs union and welfare – dynamic aspects of customs union

Module 2: Theory of Currency Areas (10 Hours)

Currency areas – optimum currency areas – contributions of Mundell, McKinnon and developments thereof

Module 3: Applications of Econometric Methods in RTA analysis with special reference to Gravity Models (15 Hours)

The concept of gravity in economic analysis – theoretical underpinnings of gravity models – some applications of gravity models in regional trading and monetary analysis.

Module 4: Contemporary Regional Trading and Monetary Arrangements (15 Hours)

Regionalism and multilateralism in the context of WTO – Overview of regional trading arrangements in Asia - Any two of the following, as chosen by the course instructor, to be studied in details: SAARC and SAFTA, ASEAN & AFTA, European Union, NAFTA, regional trading arrangements in Africa, Africa-EU trade.

References:

1. Jagdish N. Bhagwati, Pravin Krishna and Arvind Pangariya, (eds.), Trading Blocs: Alternative Approaches to Analyzing Preferential Trading Arrangements, Cambridge, Mass. & London, England: MIT Press, 1999 (Modules 1 & 4)
2. Jacob A. Frankel, (eds.), The Regionalization of the World Economy, Chicago & London: University of Chicago Press, 1998 (Modules 3 & 4)
3. Richard Baldwin and Charles Wyplosz, The Economics of European Integration, New York: McGraw Hill, 2004 (Modules 2 & 4)

Statistical Foundations of Econometrics (ECO 207)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: This course aims to familiarize students with elements of probability and inferential statistics that form the basis of modern econometrics. This course is a bridge between what is taught in the core paper and more advanced treatments of the subject.

Course Outcomes for Statistical Foundations of Econometrics (ECO 207)

CO1: able to ground empirical techniques in a solid theoretical basis

CO2: Ability to design and implement more complex models than the basic linear model to model real-world situations.

Module 1: Axiomatic Approaches to Probability (15 Hours)

Sample spaces, sigma fields and probability measure- Probability Axioms and their Implications- Counting methods- Conditional probability, independence and exchangeability- Bayes' Theorem and its Applications

Module 2: Random Variables and Probability Distributions (15 Hours)

The concept of a random variable- joint, marginal and conditional distributions- Moment generating function and cumulants- Independent random variables- Some discrete and continuous random variables (normal, t, chi-square and F distributions mandatory)- Functions of random variables

Module 3: Introduction to Statistical Inference (15 Hours)

Modes of Convergence- Weak and strong law of large numbers – Central limit theorem with proof- Properties of estimators- Different Estimation methods and the properties of the associated estimators (Multiple OLS estimators mandatory).

Module 4: Hypothesis Testing Theory (15 Hours)

UMP tests and unbiased tests- simple null versus composite hypotheses- Likelihood ratio test- Wald Test- Lagrange Multiplier Tests- Tests of restrictions in an OLS framework and their applications.

References:

Essential Readings

1. Rohatgi V., Statistical Inference, Dover, New York, 2003 (All Modules).
2. Nachane D.M, Econometrics: Theoretical Foundations and Empirical Perspectives, OUP, Delhi, 2006 (All Modules)

Economics of Agricultural Production and Rural Markets (ECO 208)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: This course would help understand the various types of relationships in agriculture: factors and products, problems of instability in production, the functioning of and imperfections in credit markets, labour markets, and land markets.

Module 1: Economics of Agricultural Production, Resource Use and Instability in Agriculture (15 Hours)

Resource and input use – Important production relationships – Economics of input and product substitution – Imperfections in product and input markets in developing agriculture – Sources of price variability and income instability – Rationale for and types of government intervention for price support and reduction in instability – Alternative concepts of cost of cultivation and determination of minimum support prices in India – Role and optimum size of buffer stocks.

Module 2: Rural Credit Markets (15 Hours)

Characteristics of rural credit markets, credit fragmentation – Organized and unorganized sectors – Theories of informal credit markets: Lender's Risk Hypothesis, Default and collateral, Credit rationing: Default, Informational asymmetries – Moral hazard – Evolution of credit systems in India – Role and Performance of Commercial Banks, Co-operative Credit Institutions, Regional Rural Banks, NABARD and Micro-credit through SHGs in India, imperfections in rural credit markets in India.

Module 3: Labour Markets (15 Hours)

Concepts of work, skill and productivity – Methods of measurement of employment and unemployment – Free and unfree labour – Types of employer-employee relationships – Determinants of wage rates – Labour market segmentation – Gender-based discrimination – Biases in data sources – Wage Differentials – Contract Labourers in rural markets.

Module 4: Land and Lease Markets (15 Hours)

Types of farming – Historical evolution – Segmented property rights – Characteristics and functioning – Economic, extra-economic and legal restrictions – Lease market – Formal and informal leases – Economics of share tenancy – Crop-sharing practices in India – Inequity in distribution of holdings – Market interlocking and interlinkages – Analysis of rural classes – Contract Farming.

References:

1. Heady Earl O., Economics of Agricultural Production and Resource Use, Prentice Hall, New York, 1961 (Module 1)
2. Kahlon A.S. and D.S. Tyagi, Agricultural Price Policy in India, Allied Publishers Pvt. Ltd., New Delhi 1983 (Module 1)
3. Basu Kaushik, Agrarian Structure and Economic Underdevelopment, Harwood, Switzerland, 1990 (Modules 2, 3, 4)
4. Dantwala M.L. (Ed), Indian Agricultural Development since Independence, (Second Edition) Oxford and I.B.H. Pvt. Ltd., 1991 (Module 2)
5. Ray Debraj, Development Economics, Oxford University Press, Oxford, 2004 (Module 2)
6. Johl S.S. and Kapur T.R., Fundamentals of Farm Business Management, Kalyani Publishers, New Delhi, 1977 (Module 1)
7. Bardhan P.K, Land, Labour and Rural Poverty, Oxford University Press, New Delhi, 1984 (Module 3, 4)
8. Kapila Uma, Understanding the Problems of the Indian Economy, (Sixth Edition) Academic Foundation, New Delhi, 2005 (Modules 2, 3, 4)
9. Cheung, S.N.S., The Theory of Share Tenancy, University of Chicago Press, Chicago, 1969 (Module

Economics of Labour Markets (ECO 209)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: Labour market issues are important for students of Micro, Macro, and Industrial Economics. The course sheds light on a range of new developments and a host of issues studied by generations of labour market experts. It captures the interplay of various factors in the labour market by describing demand/supply aspects, wages, employment, unemployment, the cost of labour, workers' participation and impact of new labour policies in the labour market. The course will be offered in the third semester.

Course Outcomes for Economics of Labour Markets (ECO 209)

CO1: To provide insights about the functioning of labour market

CO2: Learn different approaches pertaining to labour market

CO3: Knowledge on wage related and other functional aspects with regard to labour markets.

Module 1: Nature of the Labour Market (10 Hours)

Concept of labour market, Characteristics, Types, Search in labour markets, The theory of Human Capital, Investment in Human Capital, Costs and life-time benefits to education

Module 2: Micro and Macro Approaches in Labour Markets (20 Hours)

The theory of labour demand; time period and types of markets, Industry demand for labour, Determinants of labour demand, The theory of supply, Work-leisure choice in indifference curves, Budget constraints, Utility maximization, Backward-bending labour supply curve and its applications, Classical, Neo-classical and Keynesian theory of labour markets, The inflation- unemployment trade-off, Nominal Rigidities

Module 3: Wage Issues in Labour Markets (15 Hours)

Theories of Wages, Wages in different markets, Wage structure and components of wages, Share of wages, Distribution and Inequality of wage income, Male-female wage differentials, Inter- Sectoral wage differentials, Contract labour, Properties of contractual wages, Labour market rigidities and flexibilities, Wage and output relations in India during pre- and post-reform period

Module 4: Labour Markets in India (15 Hours)

Linkages in labour markets, role of risk, Information and incentives, Dualism and segmentation, Labour market flexibility, Employee turnover, Migrant labour, State and labour markets, Impact of trade unions on productivity and wages, Minimum wages, Social security, Occupational safety and security, Wages and incomes policy in India, Impact of liberalization and globalization.

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References:

Essential Readings

1. Bhattacharya BB and S Sakthivel, Economic Reforms and Jobless Growth in India in the 1990s, The Indian Journal of Labour Economics, Volume 48, No.2, 2005, pp. 243-258
1. Bhagoliwal T.N., Economics of Labour and Industrial Relations, Sahitya Bhawan, Agra, 1985
2. Bloom Gordon F and Northrup Herbert R, Economics of Labour Relations, Richard D Irwin Inc, Homewood, 1973
3. Cahuc Pierre and Andre Zylberberg, Labor Economics, MIT Press, 2004
4. Government of India, Report of Second National Commission on Labour, 2002
5. Harris-White Barbara and Sinha Anushree, Trade Liberation and India's Informal Economy, Oxford University Press, New Delhi, 2007
6. Sapsford David and Zafiris Tzannatos, The Economics of the Labour Market, Macmillan, London, 1993
7. Singh Jwitesh Kumar, Labour Economics, Deep and Deep Publishers, Delhi, 1998
8. Uchikawa Shuji (eds.), Labour Market and Institutions in India 1990s and Beyond, Manohar Publishers, New Delhi, 2003
9. Unni Jeemol and Uma Rani, Employment and Income in the Informal Economy: A Micro Perspective, in Renana Jhabvala, Ratna M Sundaram and Jeemol Unni (eds) Informal Economy Centre-stage: New Structures of Employment, Sage Publications, New Delhi, 2003.

Financial Economics (ECO 210)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: The objective of the course is to introduce students over 48 lectures to the major topics in the subject such as mean-variance portfolio theory, the capital asset pricing model, efficient markets hypothesis, pricing of bonds as also to different systems of financial markets.

Course Outcomes for Financial Economics (ECO 210)

CO1: Understand the theoretical foundations of modern finance theory.

CO2: Understand concepts central to modern finance theory such as the mean-variance criterion, portfolio diversification, asset pricing models, and efficiency of financial markets.

CO3: Introduce to students a major segment of financial markets – the fixed income securities markets with a special focus on bond markets and the pricing of bonds.

CO4: Understand using general equilibrium theory different kinds of financial markets viz. spot markets, contingent claims and Arrow securities markets and incomplete and complete markets.

CO5: Create and enable students to develop a better understanding of concepts which have a connection to the real world of Finance and financial markets.

Module 1: Capital Asset Pricing Model (15 Hours)

Mean-Variance Criterion - Measuring Risk and Return for a Single Asset and for a Portfolio - Portfolio Diversification - Portfolio Efficiency Frontier, Capital Market Line, Market Portfolio, Security Market Line - Extensions of the CAPM - Performance Measures - Arbitrage Pricing Theory

Module 2: Valuation Models and Bubbles (15 Hours)

Rational Valuation Formula - Consumption CAPM - Efficient Markets Hypothesis - Euler Equation and the Rational Valuation Formula - Intrinsic Bubbles - Noise Traders and Herding - Noise Traders and Rational Valuation Formula - Noise Traders and Contagion.

Module 3: Bond Markets (15 Hours)

Measures of yield - Pricing of Bonds - Measures of Price Sensitivity: price value of a basis point, duration and convexity - Term Structure Models.

Module 4: Systems of Financial Markets (15 Hours)

Spot Markets – Contingent Claims Markets – Arrow Securities – Ordinary Securities Markets – Incomplete Markets – Financial Markets and Financial Intermediaries.

References:

1. Cuthbertson, K., Quantitative Financial Economics: Stocks, Bonds and Foreign Exchange, John Wiley and Sons, USA, 1996. (Modules 1 and 2)
2. Eichberger J. and I.R. Harper, Financial Economics, Oxford University Press, New York, 1997. (Module 4)
3. Fabozzi, F.J., Bond Markets: Analysis and Strategies, Eighth Edition, Prentice Hall, New Jersey, 2012. (Module 3)
4. Tuckman, B. and Serrat, A., Fixed Income Securities: Tools for Today's Markets, Second Edition, John Wiley and Sons, New Jersey, 2012. (Module 3)
5. Copeland T.E., J. F. Weston and K. Shastri, Financial Theory and Corporate Policy, Fourth Edition, Pearson Addison-Wesley USA, 2005. (Modules 1 and 2)
6. Fama, E. F. Efficient Capital Markets: A Review of Theory and Empirical Work, Journal of Finance, vol.25, no.2, pp. 383-423, 1970. (Module 2)

Theory of Monetary Institutions (ECO 211)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: The course is 1. constructive, that is, will exploit the open foundations of the subject to work through alternative monetary arrangements using microeconomics, and 2. relevant, in that it connects with abiding discussions on the nature of money, the role of banks, the appraisal of central banks, a world central bank, and so on.

Course Outcomes for Theory of Monetary Institutions (ECO 211)

CO1: Focus on the theoretical foundations by working through alternative monetary arrangements along with a focus on the functions of the central bank using microeconomics.

CO2: Provide a connect of the theoretical aspects with the real world discussions on the nature of money, the role of banks, the appraisal of central banks, and a world central bank.

Module 1: One-period Trade (15 Hours)

Market mechanisms: The “bid-offer” market, many monies, gold and paper money: The loan market, the money rate of interest, a fractional reserve system: modelling trust, Fiat money: modelling bankruptcy, Incomplete markets: commodity money and other structures, money and liquidity: the store of value function.

Module 2: Multiperiod Trade (15 Hours)

Commodity money and credit: “badly distributed” money and credit, fiat money and credit: strategic market games with/without lending, Transactions and the float: financing the float, capital stock, salvage values, Expectations: strategic market games with uncertainty, Money and Transactions Costs: endogenous money, the combinatorics of exchange, brokers and dealers: middlemen, clearinghouses, and setup costs.

Module 3: Banking Arrangements (15 Hours)

An “ideal banking system”: a modern loanable funds theory, the bank’s portfolio problem equilibrium: from the corn economy to the monetary economy, towards a general equilibrium theory of credit
Narrow Banking: “Deposit Creating Institutions”, Free Banking, Universal Banking.

Module 4: Central Banks (15 Hours)

Open-market operations: incentive-compatible contracts, The Lender of Last Resort function: moral hazard, Monetary policy with informal financial markets: dual economy dynamics, Monetary-Fiscal Coordination, Managing Aggregate Risk: systemic fragility and policy, A World Central Bank: The IMF.

References:

Essential Readings

1. Shubik, Martin, The Theory of Money and Financial Institutions, volumes 1& 2, Cambridge: The MIT Press, 1999.
2. Stiglitz, Joseph E. and Bruce E. Greenwald, Towards a New Paradigm in Monetary Economics, Cambridge: The Cambridge University Press, 2003.

Municipal Functions: Governance and Finance (Special Reference to Maharashtra) (ECO 212)

Number of Credits: 2

Pattern of Evaluation: Standard

Preamble: This course takes a critical look at the currently fashionable ‘decentralization’ and ‘governance’ in the context of the passage of 74th Constitutional Amendment. Municipal governments form the third tier of governance. There are a whole lot of functions that have been assigned to the local governments. There are however some issues that arise in this context. One of the main ones that the student will be expected to study in this course will be the state of finances of the local bodies. The related issue of level of autonomy for sub-national governments within a federal set up will also be discussed. The budgets of select municipal bodies will be discussed in detail from the perspective of – and using economic categories – an economist. The devolution from higher governments and the role of state finance commissions in this context will also be touched upon. The role of civil society, especially in the context of participatory democracy and empowerment of people, will also be studied.

Course Outcomes for Municipal Functions: Governance and Finance (Special Reference to Maharashtra) (ECO 212)

CO1: Understand the state of finances of the local bodies.

CO2: Get an insight into the level of autonomy of sub-national governments within a federal set

CO3: Analyse budgets of select municipal bodies

CO4: Assess the Role of State Finance Commissions

Module 1: (15 Hours)

The municipal ‘acts’ – the obligatory and discretionary functions – the tax and non-tax revenues – the profile of ULBs in Maharashtra The state of municipal finance in Maharashtra – Budgets –Charters

Module 2: (15 Hours)

Decentralization – 74th Constitutional Amendment – details and critique – State Finance Commission Report – issues in governance – functions and process reengineering – capacity building – outcome and performance budgets – role of civil society

References:

Essential Readings

1. Primary (original) Sources: 74th CA; Budget Documents of MCGM, Maharashtra State Finance Commission Reports, AILSG Reports (Module I)
2. Bahl, R and J. Linn, Urban Public Finance in Developing Countries, OUP, 1992 (Module I, II)
3. Karnik, A., A. Pethe and D. Karmarkar, Approach to Designing Intergovernmental Transfers, Report for UNCHS/UNDP, Vols. I&II, 2002 (Modules I, II).

Additional Readings

1. Working papers of the Vibhooti Shukla Unit
2. Henderson, J.V. and J.F. Thisse (eds), Handbook of Urban and Regional Economics, Elsevier Science, 2006.

International Finance (ECO 213)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: This elective course, to be offered in the fourth semester, requires a good understanding of Macroeconomics. This course aims at providing a theoretical exposition of different aspects of international finance and financial institutions in the context of globalization. A good understanding of International Trade and Trade Policies is desirable.

Course Outcome for International Finance (ECO 213)

- CO1: Provide a theoretical understanding of different aspects of international finance and international financial institutions.
- CO2: Introduce students to the nuances of exchange rates and foreign exchange markets and balance of payments and related issues.
- CO3: Expose students to the concept of international investment and its financing
- CO4: Familiarize students with the different international financial institutions.

Module 1: Foreign Exchange Rates and Markets (15 Hours)

Foreign Exchange Rates: Fixed, Flexible, Nominal, Real and Effective Exchange Rates, Purchasing Power Parity and Interest Parity. Foreign Exchange Markets: Spot, Forward, Futures and Options Currency Markets. Foreign Exchange Risk and Exposure: Exposure, Risk and Parity Relationship, Accounting Exposure versus Real Exposure, Operating Exposure, Hedging Risk and Exposure.

Module 2: Balance of Payments (15 Hours)

Balance of Payments: Current Account Balance and Capital Account Balance, Official Reserve Transactions, Relationship between Balance of Payments and National Income Accounts. Approaches to Balance of Payments Adjustments: Elasticity, Absorption, Monetary and Portfolio-balance Approaches

Module 3: International Investment and Financing (15 Hours)

Cash Management: Investment and Borrowing Criterion with Transaction Costs- International Dimensions of Cash Management. Portfolio Investment: International Capital Asset Pricing- Settlement of International Portfolio Investments. Capital Budgeting for Foreign Investments: Project Selection, Cash Flows, Discount Rates, Growth and Concerns about Multinationals. International Financing: Equity Financing, Bond financing, Bank financing

Module 4: International Financial Institutions (15 Hours)

Gold Standard and Gold Exchange Standard: International Monetary Fund- International Reserves- Special Drawing Rights. Theory of Optimum Currency Areas: International Policy Co-ordination, Currency Board, International Financial and Currency Crisis. International Debt: Measures of Indebtedness-International Debt Crisis.

References:

Essential Readings

1. Kenen Peter B, The International Economy, Cambridge University Press, New York, 2000
Chapters: 12, 13, 14, 15, 16, 17, 18 and 19 (Modules 2 and 4)
2. Krugman P. R. and Obstfeld M., International Economics-Theory and Policy, Addison-Wesley, Delhi, 2000 Chapters: 12, 15, 16, 20 and 22 (Modules 2 and 4)
3. Levi Maurice D., International Finance, Routledge, New York, 2005 Chapters: 2, 3, 4, And 9 to 18
(Modules 1, 2 and 3)
4. Pilbeam Keith, International Finance, Palgrave, New York, 1998 Chapters: 14 and 15.(Module 4).
5. Salvatore Dominick, International Economics, John Wiley and Sons, Singapore, 2002Chapter: 14,
(Module 1)
6. Sodersten Bo and Reed Geoffrey, International Economics, Macmillan, London, 1994Chapters: 23,
25, 30 and 31) (Modules 2 and 4)
7. Ugur Mehmet, (edited), An Open Economy Macroeconomics Reader, Routledge, London,2002
Chapters: 16, 17, 19, 20, 21 and 22 (Modules 2 and 4)

Time Series Econometrics (ECO 214)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: The course aims at building on the Basic Econometrics course to equip the students with econometric techniques of time series analysis. Though the approach will largely be applied, some derivations of theoretical results will be emphasized. Applications to financial econometrics at the level of Chris Brooks' Introductory Econometrics for Finance will be emphasized.

Course Outcomes for Time Series Econometrics (ECO 214)

CO1: Understand, estimate and forecast ARMA models

CO2: Understand, estimate and forecast ARCH-GARCH models

CO3: Understand, estimate and forecast VAR models

CO4: Understand, estimate and forecast cointegrated models

CO5: Understand and estimate nonlinear models and apply the relevant time series techniques for appropriate research questions

Module 1: Introduction and Single Equation ARIMA Models (20 Hours)

Difference equations and lag operators, Data generating process, Characteristic equations, Ergodicity and Stationarity, Autocorrelation and Partial autocorrelation functions, Stationary ARMA processes, Invertibility, Box-Jenkins Approach to identification, estimation and diagnostic checking, Time series analysis in the frequency domain, Uses of spectral analysis.

Module 2: Modeling Volatility and Trends (10 Hours)

ARCH and GARCH processes, Deterministic and Stochastic trends, Dickey-Fuller tests and extensions, including testing for structural change.

Module 3: Multi-equation Time Series Models (15 Hours)

Transfer Function Models, Intervention analysis, VAR models, Impulse-response functions and forecast error variance decomposition, Cholesky and Blanchard-Quah decompositions, Structural VAR models.

Module 4: Cointegration and Error-Correction Models (15 Hours)

Co integration and Common trends, Error-correction models, Engle-Granger methodology, Co integration in multivariate models, Johansen Methodology, General-to-specific modelling, topics in non-linear time series models: Threshold autoregressive models – Estimating Regime switching models.

References:

Essential Readings

1. Walter Enders, Applied Econometric Time Series, 2edition, Singapore: John Wiley & Sons, 2004
2. James D. Hamilton, Time Series Analysis, Princeton: Princeton University Press, 1994
3. Chris Brooks, Introductory Econometrics for Finance, Cambridge: Cambridge University Press, 2002
4. Dilip M. Nachane, Econometrics, New Delhi: Oxford University Press, 2006.
5. Lutkepohl, Helmut, New Introduction to Multiple Time Series Analysis, 2006.

Public Choice: Theory and Applications (ECO 215)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: The objective of the course is to provide an introduction to Public Choice theory. Public Choice is a relatively young sub-discipline of economics, having developed as a separate field largely since 1948. Public Choice can be defined as the application of economics to political science. The subject matter is that of political science and the methodology is that economics. In this course the students will be introduced to various issues in a direct and representative democracy framework. Various policy matters too will be discussed in the Public Choice framework. Students would also analyze policy issues a politico-economic framework via projects.

Course outcomes for Public Choice: Theory and Applications (ECO 215)

CO1: Understand the role of the State.

CO2: Understand the political dimension of various government activities.

CO3: Understand the role of Interest Groups and their influence on policy making

Module 1: Toolkit for Analysis & Basic Issues (15 Hours)

What is Political Economy? The Emergence of Public Choice, A Just Social Contract: The Rawlsian Principle, Critique of Rawlsian Social Contract, Social Contract as a Constitution, The Constitution as a Utilitarian Contract

Module 2: Public Choice in a Direct Democracy & Representative Democracy (15 Hours)

Direct Democracy: The Choice of Voting rules, Majority Rule & Positive Properties: Median Voter Theorem, Logrolling, Cycling, Simple Alternatives to Majority Rule, Representative Democracy: Two Party Competition, Bureaucracy.

Module 3: Conflicting Interests (15 Hours)

Elections and Policymaker: Vote and Popularity Functions, Partisan Cycles, Political Business/Budget Cycles Interest Groups: Group size and Group Behaviour, Special Interest Theories, Rent Seeking: Theory of Rent Seeking, Rent Seeking through Regulation and Political Process, Welfare Losses from Rent Seeking.

Module 4: Policy Issues (15 Hours)

Government Size and Economic Growth: the Olson Hypothesis, Bureaucracy, Political Instability and Growth. Political Economy of Local Government: The Decentralization Theorem, Exit and Voice within Local Government, Tiebout Hypothesis 'voting with your feet', Public Choice and Intergovernmental Grants: The Flypaper Effect, Romer-Rosenthal Model, Fiscal Illusion, the Leviathan hypothesis.

References:

Essential Readings

1. Mueller D., Public Choice III, Cambridge University Press, 2003 (Modules 1, 2, 3, 4)
2. Drazen A., Political Economy in Macroeconomics, Princeton University Press, 2000 (Modules 1, 3)
3. Cullis J. and P. Jones, Public Finance and Public Choice, Oxford University Press, 1998.

Data Envelopment Analysis (ECO 216)

Number of Credits: 2

Pattern of Evaluation: Standard

Preamble: The course is useful in measuring the performances of similar units. It identifies the extent of inefficiency, the causes for this inefficiency through the wastage of resources and also suggests the extent to which the performance can be improved.

Course Outcome for Data Envelopment Analysis (ECO 216)

CO1: Understand the basic and Programme related concepts

CO2: Get acquainted with MPI and regression related aspects

Module 1: Basic Concepts of Data Envelopment Analysis (DEA) (5 Hours)

A Decision-Making Unit; Measurement of Efficiency; Frontier Analysis; illustrative exercises

Module 2: Mathematical Programming Aspects of DEA (10 Hours)

Linear Programming; primal & dual; fractional DEA programme; output- maximization and input-minimization DEA models; illustrative exercises

Module 3: Economies of Scale: (5 Hours)

Variable and Constant Returns to Scale and DEA, Technical and scale efficiencies, Computer applications using industry data

Module 4: Extensions in DEA: (10 Hours)

Malmquist Productivity Index, Use of Regressions and sensitivity analysis in DEA. Practical applications using sectoral data

References:

Essential Readings

1. Ramanathan R, An Introduction to Data Envelopment Analysis A tool for performance measurement, Sage Publications New Delhi, 2003 (all Modules)
2. Ray Subhash, Data Envelopment Analysis Theory and Techniques for Economics and Operations Research, Cambridge University Press, UK, 2004 (all Modules).

Input Output Theory and Applications (ECO 217)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: The elective is useful for both structural analysis and policy guidance in an economy. It helps in revealing the quantitative significance of various types of interdependence. This course will provide hands on computer for applications and analysis.

Course Outcomes for Input Output Theory and Applications (ECO 217)

CO1: Understand the input-output theory.

CO2: Apply the input-output models in planning and trade.

CO3: Using the input-output models in regional analysis.

Module 1: Input Output Model (20 Hours)

Static Input Output Models -Definition, Formulation, Scope, technical coefficients, balance equations, economic interpretations, direct and indirect effects, the capital coefficient matrix.

Multiplier and Linkage analysis - Output and Income multipliers, backward and forward linkages, total linkage effect, interpretation of linkages, practical applications. Extended multiplier analysis: employment effects, distribution of income.

Module 2: Dynamic Analysis (10 Hours)

Dynamic Input Output analysis: Dynamic Input output Models, model for planning, projection of economic growth, measurement of economic development and growth potential, use of shadow prices in a developing economy. An Introduction to basics of CGE models and SAM

Module 3: Structural Analysis (15 Hours)

Trade Strategies: Import substitution, intensity, measurement, impact. Pattern of international trade, determinants, comparative advantage, the semi-input output method, programming approach.

Module 4: Regional Input Output Analysis (15 Hours)

Regional Models: Single region models and multi region models, Regional Coefficients-Non-survey and partial survey methods- the RAS technique, Location quotients and related techniques

References:

Essential Readings

1. Bulmer-Thomas V (1982) *Input Output Analysis in Developing Countries Sources, Methods and Applications*, John Wiley & Sons Ltd, New York (Modules 1, 2, 3, 4)
2. Chenery H B & Clark P G (1967) *Inter Industry Economics* John Wiley & Sons Ltd, New York. (Module 1)
3. Mathur, P.N. and Bharadwaj, R (eds.) (1967) *Economic Analysis in Input Output Framework with Indian Empirical Explorations*, Input Output Research Association, Pune. (Module 2)
4. Miller R & Blair P (2009) *Input Output Analysis: Foundations and Extensions* Prentice Hall, Inc, New Jersey (Modules 1, 2, 3)
5. Pradhan B.K., Saluja M.R., Singh S.K. *Social accounting Matrix for India Concepts Construction and Application*, Sage Publications Ltd., New Delhi 2006 (Module 1, 2)

Demography: Theory and Basic Analysis (ECO 218)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: The course is designed to provide an understanding of demographic processes including an in-depth knowledge of linkages between population and economic development. It introduces major developments in demographic concepts by highlighting the sources of demographic data, fertility, mortality, migration and population projection.

Course Outcome for Demography: Theory and Basic Analysis (ECO 218)

C01: Awareness of issues covered under the Population Science and Demography and the distinction Between them.

C02: Provide insights on the basic issues resulting in population growth or decline

C03: Gaining fundamental knowledge on demographic theories

Module 1: Population Science, Demography and Economic Development (15 Hours)

Population and Economic Development, Population and Environment, Implications of Population Growth on Regional Imbalances, Population Science and Demography, Sources of Demographic Data, Malthusian Theory of Population, Theory of Demographic Transition, Age and Sex Composition of Population, Age pyramids, Ageing Population.

Module 2: Nuptiality and Fertility (15 Hours)

Basic concepts of Nuptiality, Analysis of Marital Status Data, Singulate Mean Age at Marriage: Synthetic Cohort and Decadal Synthetic Cohort Method, Concepts and measurements of Cohort and period fertility, Rele's Method and Reverse survival method in fertility analysis, Bongaart's Proximate Determinants of Fertility, Socio-Economic Determinants of Proximate Variables, Indirect Estimation of Fertility Rates, Davis's Intermediate Variables framework of Fertility, Age Patterns of Fertility.

Module 3: Mortality (15 Hours)

Basic concepts and analysis of Morbidity, Concepts and Measurements of Mortality, Infant and Child mortality rates, Standardisation of Mortality Rates, Life tables: Concepts, Types, Uses, Methods of construction; Differentials and Determinants of Mortality.

Module 4: Migration and Population Projections (15 Hours)

Concepts, Patterns and Measures of Migration, Migration Theories and Models (Ravenstein's, Lee's, Wolpert's and Todaro's model), Internal and International Migration, Spatial Distribution and Urbanisation, Importance of Population Projection, Methods of Population projection: Mathematical and components methods.

References:

Essential Readings

1. Bhatt M. (2002): On the Trial of Missing Indian Females, *Economic and Political Weekly*, 37(51) (52):5105-518, 5244-5263.
2. Bhende AA and T. Kantikar, *Principles of Population Studies*, Himalaya Publishers, Mumbai, 2000
3. Bogue DJ, EE Arriagas, Douglas L. Anderson, *Reading in Population Studies and Methodology*, Published for United Nations Population Fund by Social Development Center, Chicago, Illinois, 1993
4. Coale, A.J., 1971, Age Patterns of Marriage, *Population Studies*, 25(2), pp. 193 –214
5. Henry, S. Shryock, *The Methods and Materials of Demography*, Vol. 1 and 2, U.S. Department of Commerce, Bureau of Census, Washington D.C. 1971, pp. 283-298 and 549 – 578
6. International Institute for Population Sciences (IIPS), *National Family Health Survey, (NFHS) 1,2,3*, Mumbai, 1992-93; 1998-99; 2006-07
7. International Institute for Population Sciences (IIPS), *Reproductive and Child Health Survey*, Mumbai, 2002-04
8. Lutz, Wolfgang, *Distributional Aspects of Human Fertility: A Global Comparative Study*, Academic Press, 1989, New York
9. Mishra BD, *An Introduction to Demography*, South Asian Publishers Pvt. Ltd, New Delhi, 1981
10. Mitra RG, *Understanding patterns of Migration from Census 2001 Data*, Population, 2002
11. *Stabilisation and Development*, Council of Cultural Growth and Cultural Relations, Cuttack
12. Preston Samuel, Patrick Heuveline & Michel Guillot, *Demography: Measuring and Modelling Population Processes*, Blackwell, Cornwall, 2001
13. Sydney HC, *Population Theories and Economic Interpretation*, Routledge, London, 1968.

Trade Unions and Industrial Relations in India (ECO 219)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: This course attempts to provide a basic conceptual understanding of the economics of trade unions and industrial relations in India. The syllabus also includes the empirical relevance of theories with suitable examples from a practical industrial relations viewpoint. Such an attempt will be strengthened to enable familiarity with relevant data along with their limitations.

Course Outcome for Trade Unions and Industrial Relations in India (ECO 219)

C01: Provision of Knowledge on Trade Unions

C02: Understanding on approaches to Industrial Relations

Module 1: Economics of Trade Unions (15 Hours)

Meaning, Concept, Evolution and Role of Trade Unions. Approaches to the Origin of Trade Unions. Bargaining Theory of Wages, Impact of unions on productivity and wages, Employment Security and Efficiency, Unorganised sector.

Module 2: Industrial Relations (15 Hours)

Definition and scope of industrial relations, Approaches to Industrial Relations: Macro Approaches-System Approach and Class Conflict Approach, Micro Approaches-Taylorism, Fordism and Post-Fordism, Neo-Fordism, Pluralism, Human Relations School and Organisational Behaviour Approach.

Module 3: Industrial Relations in India (15 Hours)

Trade Unions and Workers: Industrial Sociology of workers in India, History, growth and structure of trade unions, Independent and white collar unions in India. Trade Unions and Contract Workers. Employer's Organisations: Role of managerial class in industrial relations. Industrial conflict: Forms of conflict, strikes, lockouts, absenteeism, employee turnover, causes and consequences of and trends in industrial disputes.

Module 4: Role of the State in Industrial Relations in India (15 Hours)

Labour Policy in India: Pre and Post-Reform scenario, Impact of Globalisation- Tripartism, Labour Legislation affecting industrial relations: Statutory and Non-Statutory measures to settle industrial disputes. Workers Participation in Management. Voluntary Retirement Schemes, Social Security Measures, Unemployment Insurance. Occupational Safety and Health Management Systems. India and the ILO.

References:

1. Amin, Ash (Ed.), Post-Fordism-A Reader, Blackwell, Oxford, 1994 (Module 2)
2. Government of India, Ministry of Human Resource Development, Report of Second National Commission on Labour, 2002 (Module 3, 4)
3. Hicks J.R., The Theory of Wages, Clarendon Press, Oxford, 1932 (Module 1)
4. Monappa, Arun, Industrial Relations, Tata McGraw Hill, New Delhi, 2005. (Module 4)
5. Pencavel, John, Labour Markets under Trade Unionism: Employment, Wages and Hours, Basil Blackwell, Cambridge, Massachusetts, 1991 (Module 1)
6. Ramaswamy, E.A. and Uma Ramaswamy, Industry and Labour, Oxford University Press, Bombay 1981 (Module 3)
7. Rees, Albert, The Economics of Trade Unions, University of Chicago Press, Chicago, 1973 (3rd Edition) (Module 1)
8. Roy. J. Adams (eds.), Comparative Industrial Relations, Harper Collins Academic, London, 1991. (Module 2,4)

Financial Derivatives (ECO 220)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: This is a one-semester course to be taught over 48 lectures with the objective to acquaint students with the concepts and analytics of financial derivative securities, the different derivative instruments and the pricing of derivative securities.

Course Outcomes for Financial Derivatives (ECO 220)

CO1: Develop a better understanding of current major financial instruments such as forwards, futures and options.

CO2: Analyse profitable trading strategies

CO3: Understand the pricing of derivative securities

CO4: Undertake professional certificate courses on the subject with a focus on employment in the financial sector as well as future research in the subject.

Module 1: Introduction to Basic Concepts (10 Hours)

Time Value of Money – Equities – Commodities - Fixed Income Securities.

Module 2: Forwards, Futures and Options (20 Hours)

Basic Concepts - Purpose of Futures Markets (price discovery and hedging) - Types of Traders and Orders in Futures Markets -Forward Rate Agreements (FRAs) - Option Positions, Margins, Bid-Ask Spread, Writing Options, Warrants and Convertibles, Exotic Options, Put-Call Parity - Straddles and Strangles, Spreads.

Module 3: Pricing of Derivative Securities (15 Hours)

Determination of Forward and Futures Prices, Characteristics of Futures Prices, Futures Prices and Expectations, Hedging Strategies using Futures - Black-Scholes Model, Alternatives to Black-Scholes, the Greeks, Speculating and Hedging with Options - Bond Options and Pricing of Contingent Claims.

Module 4: Swaps (15 Hours)

Comparative Advantage Principle, Swap Facilitators (Brokers and Dealers), Interest Rate and Currency Swaps and their Valuation, Other Swaps (Equity Swaps, Commodity Swaps).

References:

Essential Readings

1. Wilmott, Paul (1999): Derivatives: The Theory and Practice of Financial Engineering, JohnWiley and Sons, New York
2. Hull, John C. (2006): Options, Futures and Other Derivatives, Sixth Edition, PearsonPrentice Hall.
3. Redhead K. (1997): Financial Derivatives: An Introduction to Futures, Forwards, Optionsand Swaps, Prentice Hall.

Additional Readings

1. Kolb R.W., (1997): Understanding Futures Markets, Fourth Edition, Blackwell Publishing,New York
2. Marshall, J.F. and K.R. Kapner (1993): The Swaps Market, Second Edition, Kolb PublishingHouse

Open-Economy Macroeconomics (ECO 221)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: The course deals largely with the relatively more recent developments in the field of international finance through a macroeconomic model-based approach. It begins, though, in Module 1, with the more traditional open-economy models, as a backdrop to the subsequent analysis. The emphasis throughout is on rigour, including the application of inter-temporal general equilibrium models based on utility/profit maximization in Units 2 to 4. This will be combined with approaches that yield insights into models that, though rigorous, are not micro-founded. The teaching will rely largely on the use of Obstfeld and Rogoff (1999) supplemented by Rodseth (2000).

Course Outcomes for Open-Economy Macroeconomics (ECO 221)

CO1: It will acquaint the students with the relatively more recent developments in the field of international finance through a macroeconomic model-based approach.

CO2: The students will be able to build on the more traditional open-economy models.

CO3: The students will learn the application of inter-temporal general equilibrium models based on utility/profit maximization.

Module 1: Traditional Open-Economy Models (15 Hours)

Open-economy monetary models with minimal structure, Mundell-Fleming-Dornbusch and Mundell-Fleming-Tobin models, Models with traded and non-traded goods, Scandinavian model of inflation.

Module 2: The Basic Inter-temporal Approach to BOP Analysis (15 Hours)

Basic ideas in a two-period endowment economy and a two-region world economy, Extension to a multi-period small economy, stochastic current account model, Government budget deficits and the current account, Feldstein-Horioka S-I puzzle.

Module 3: Stochastic Models of International Capital Flows and Asset Prices (15 Hours)

Trade across random states of nature in a small two-period open economy, Generalization of the model to the world setting, International portfolio diversification, CAPM, Sovereign risk.

Module 4: Money and Exchange Rate Regimes (15 Hours)

Monetary exchange rate models with maximizing individuals, Nominal exchange rate regimes, Speculative attacks and fixed exchange rate regimes, Target zones for exchange rates, Stochastic global general equilibrium model with nominal assets, Determination of forward foreign exchange premium.

References:

Essential Readings

1. Maurice Obstfeld and Kenneth Rogoff, Foundations of International Macroeconomics, Cambridge, Mass. & Cambridge, England: MIT Press, 1999
2. Asbjorn Rodseth, Open-Economy Macroeconomics, Cambridge: Cambridge Univ. Press, 2000
3. Jacob A. Frenkel and Assaf Razin, Fiscal Policies and the World Economy, 2nd edition, Cambridge, Mass.: the MIT Press, 1992
4. Rudiger Dornbusch, Open-Economy Macroeconomics, Basic Books, New York, 1980

Rural Political Economy (ECO 222)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: The objective of this elective is to familiarise students with rural theories and realities in the specific context of the emergence of new forces and issues both nationally and internationally, and the evolution of strategies and policies to deal with them.

Course Outcomes for Rural Political Economy (ECO 222)

CO1: Familiarize students with rural theories

CO2: Understand the rural realities in the specific context of the emergence of new forces

CO3: Understand the rural issues both nationally and internationally

CO4: Evaluate of strategies and policies to deal with rural issues

Module 1: Agriculture, Allied, and Rural Economics (15 Hours)

Definitions of and differences between agricultural, allied and rural sectors – Approaches to rural economics – Historical role of the rural sector in economic development – Impact of colonisation on agrarian development – Indigenous Peoples – Natural resources – Case study of India

Module 2: Market Structures (15 Hours)

Types and characteristics of markets – Forced commercialisation – Processes of market interlocking and inter-linkages – Land Utilisation patterns – Agrarian Reforms – Displacement and rehabilitation – Politics of food and food security – Sources of Livelihood – Employment schemes – Poverty alleviation strategies – Rural and urban linkages and disconnects

Module 3: National Processes and Globalisation (15 Hours)

Role of public policies – Private sector versus government intervention – Public-Private policy partnership – Formation of BWI's and WTO – Dunkel Draft, GATS, AOA, etc – Impact on imports and exports of developed and underdeveloped countries.

Module 4: Country Assessment Studies (15 Hours)

Japan, China, Netherlands, Israel, Uzbekistan, Brazil, Mexico, USA, Australia, New Zealand, South Africa, India, Pakistan.

References:

Essential Readings

1. Acharya S.S. and D.P. Chaudhari (eds), Indian Agricultural Policy – At the Crossroads, Rawat Publications, Jaipur, 2001
2. Bhalla G.S and Gurnail Singh, Indian Agriculture - Four Decades of Development, Sage Publications, New Delhi, 2001
3. Government of India, State of the India Farmer: A Millennium Study: 27 Volumes, Department of Agriculture and Cooperation, Ministry of Agriculture, and Academic Foundation, New Delhi, 2004.
4. Gulati, Ashok & Tim Kelley, Trade Liberalization and Indian Agriculture, Oxford University Press, New Delhi, 2003.
5. Ingco Merlinda D., and John D. Nash (eds), Agriculture and the WTO: Creating a Trading System for Development, Atlantic Publishers, New Delhi, 2005.
6. Joshi P.K., Ashok Gulati, and Ralph Cummings, Agricultural Diversification and Smallholders in South Asia, Academic Foundation. New Delhi, 2007.
7. Mujumdar N.A. and Uma Kapila, Indian Agriculture in the New Millennium, Volumes 1 & 2, Academic Foundation, New Delhi, 2006
8. Rao Hanumantha C.H., Agriculture, Food Security, Poverty and Environment: Essays on Post-reform India, Oxford University Press, New Delhi, 2006
9. Ray Shovan, Handbook of Agriculture in India, Oxford University Press, New Delhi, 2007
10. Rosset Peter, Raj Patel, and Michael Courville (eds), Promised Land: Competing Visions of Agrarian Reform, Foodfirst, California, USA, 2006

Industrial Economics (ECO 223)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: This elective course, to be offered in the third semester, requires a good understanding of both Microeconomics and Macroeconomics. This course aims at providing a theoretical exposition of the behaviour of the firm, market structure and industrial finance with some issues and relevant empirical evidence of Indian industries.

Course Outcomes for Industrial Economics (223)

- CO1: Understand the theory of firms, industrial organisation and structure-conduct-performance model.
- CO2: Understand the various market structures, strategies of firms in these markets and implications of Integration, innovation and advertising on firm's performance.
- CO3: Understand to read the actual financial statements of firms and analyse the same through financial ratios.
- CO4: Understand the methods of capital budgeting and evaluation and learn to estimate cost of capital of firms.
- CO5: Understand the issues and policies related to Indian Small and medium enterprises, public sectors. Appreciate the need and role of competition law in any economy.

Module 1: Theory of the Firm (15 Hours)

Firm Competition and Performance: Effects of Monopoly Power- Determinants of Firm Structure- Mergers- Horizontal and Vertical- Conglomerate Integration. Market Structure: Patterns of Market Structure- Determinants of Market Structure- Economies of Scale- Product Differentiation- Capital Requirements. Pricing Strategy in Oligopoly: Theories of Interdependence- Tacit Collusion and Price Leadership- Limit Pricing.

Module 2: Technical Change (15 Hours)

Market Concentration: Measures of Market Concentration. Advertising: Optimal Advertising- Advertising and Market Structure- Cost of Advertising. Invention and Innovation: Process and Product Innovation- Effects of Innovation on Welfare and Employment- Adoption and Diffusion of Innovation.

Module 3: Financial Analysis (15 Hours)

Financial Analysis: Funds Flow- Cash Flow Statements- Balance Sheet- Income Statement (Profit and Loss Account)- Ratio Analysis- Multi-Period Compounding- Continuous Compounding. Investment Appraisal: Nature of Investment Decisions- Net Present Value Method- Internal Rate of Return- Discounted Payback Period. Cost of Capital: Determining Components of Cost of Capital- Capital Asset Pricing Model (CAPM)- Weighted Average Cost of Capital (WACC). Capital Structure: Optimum Capital Structure- Modigliani-Miller Hypothesis- CAPM and Capital Structure.

Module 4: Indian Industry (15 Hours)

Industrial Growth: Trends in Industrial Growth in India- Industrial Location (factors) and Location Policy in India. Small-Scale Industries: Definition- Role- Policy- Issues and Performance. Public Enterprises in India: Performance and Constraints. Competitiveness of Indian Industries: Competition Policy and Foreign Direct Investment.

References:

Essential Readings

1. Ahluwalia I. J., Industrial Growth in India- Stagnation since the mid-sixties, Oxford University Press, Delhi, 1985 (Module 4)
2. Hay J and Morris D. J, Industrial Economics- Theory and Evidence, Oxford University Press, (Latest Edition) (Module 2)
3. Koutsoyiannis A., Modern Microeconomics, ELBS/Macmillan, Hong Kong, 1985 (Module 1)
4. Martin Stephen, Industrial Economics- Economic Analysis and Public Policy, Macmillan Publishing Company, New York, 1988/latest edition (Module 1)
5. Mohanty, Binode, (eds.), Economic Development Perspectives, Vol. 3, Public Enterprises and Performance, Common Wealth Publishers, New Delhi, 1991 (Module 4)
6. Mukherjee Dilip (eds.), Indian Industry-Policies and Performance, Oxford University Press, Delhi, 1998 (Module 4)
7. Pandey I M., Financial Management, Vikas Pub. House Pvt. Ltd., New Delhi, 2000 (Module 3)
8. Shepherd W. C., The Economics of Industrial Organization, Prentice Hall, Inc., London, 1985 (Modules 1 and 2)
9. Vepa R. K., Modern Small Industry in India, Sage Publications, 1988 (Module 4)

Agricultural Development and Policy (ECO 224)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: This course aims to enhance the students' understanding of agricultural development. Starting from basic questions like what factors lead to agricultural development or why does the share of agriculture in GDP go down once economies start developing, the course tries to enhance the students' awareness on contemporary debates in the literature, and leads them to analysis of current governmental policies and strategies for surviving in the globalizing world.

Course Outcomes for Agricultural Development and Policy (ECO 224)

CO1: Understand the agricultural development

CO2: Understand the factors lead to agricultural development

CO3: Understand the why share of agriculture goes down once economies start developing

CO4: Enhance the student's awareness on contemporary database in literature

CO5: Understand current government policies and strategies of agriculture

Module 1: Theories of Agricultural Development (15 Hours)

Role of agriculture in a developing economy vis-à-vis a developed economy; Theories of agricultural development (Lewis, Schultz, Mellor, Hayami and Ruttan)

Module 2: Sustainable Agricultural Development and Food Security (15 Hours)

Impact of green revolution; Models of spread of technology and experiences in input use efficiency; Measurement and strategies for sustainable development; Food security: Concept, measurement, magnitude, and critical evaluation of government policies

Module 3: Competitiveness of Agriculture Products and Marketing (15 Hours) Measurement of efficiency of agricultural products in international markets; Efficiency of agricultural markets in India; Form and impact of government intervention in the markets and its effects on efficiency; Commodity markets: operation and likely impacts; Strategies for surviving in a globalizing world

Module 4: History and Policies for Agricultural Development in India (15 Hours)

Trends in production since 1950; National Food Policy; Agriculture Policy; Area, productivity, employment and wage rate analysis; Trends in India's agricultural exports and imports and implications

References:

Essential Readings

1. Basu Kaushik, Analytical Development Economics, Oxford University Press, 1998(Module1).
2. Bhalla G S., Globalization and Indian Agriculture, Volume 19 of the State of the Indian Farmer Series. Academic Foundation, 2004 (Module 3)
3. Dreze Jean and Amartya Sen, Hunger and Public Action, Oxford University Press, 1989 (Module 2)
4. Lewis Arthur, Economic Development with Unlimited supply of labour, Manchester School of Economics and Social Studies 22: 139-91, 1954 (Module 1)
5. Mellor J and Mudahar M, in Agriculture in Economic Development: Theories, findings and Challenges in Asian context in A Survey of Agricultural Economics Literature, Edited by Lee Martin. University of Minnesota Press, 1992 (Module 1)
6. Norton George and Jeffery Alwang, Introduction to Economics of Agricultural Development, McGraw Hills, New York, 1993 (Module 1)
7. Sawant S D (2002), Indian Agriculture: Past developments and policies for the future, Dantwala Monograph Series, No. 4, 2002 (Module 4)
8. Schultz Theodore, Transforming Traditional Agriculture, Yale University Press, 1964 (Module 1)
9. Sengupta D, Chakraborty D and Banerjee P, Beyond the Transition Phase of WTO: An Indian Perspective on Emerging Issues, Academic Foundation, 2006 (Module 3)
10. Shiva Vandana, The Violence of the Green Revolution, Palgrave Macmillan, 1992 (Module 2)
11. Venugopal Pingali, Input Management, Volume 8 of the State of the Indian Farmer Series. Academic Foundation Executive Summary, 2004 (Module 2)

Political Economy of Reform (ECO 225)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: This course analyses the role of political institutions in shaping reform outcomes. It highlights key political challenges to economic reform. What distinguishes this course from a traditional course in political science is the application of analytical rigour to economic and political behaviour. Reforms are viewed as the establishment of institutions that provide incentives for individual decision-makers to behave in ways that are collectively desirable. Politico-economic modelling would sharpen our understanding of the process of policy-making. The Indian experience of reforms and the various political economy issues are given special attention.

Course Outcomes for Political Economy of Reforms (ECO 225)

CO1: Understand the economic and political reform experience of countries

CO2: Understand the theoretical models which help assess the reform process of various countries.

CO3: Analyse and apply the theoretical models to the reform process of Transition economies and India

Module 1: The Political Economy of Reform (15 Hours)

Political Economy of Democratic Transitions: The theoretical orientation, general concepts and arguments. Economic Policy and Political Stability: Authoritarian Regimes and New Democracies Institutions and Economic Policy: The Party Systems, Reform of Bureaucracy, Interest Groups and Government

Module 2: Inaction and Delay in Reform & Strategies for Reform (15 Hours)

Inaction & Delay: The Political Economy of Delayed Reform, Stabilization as a War of Attrition: Alesina-Drazen Model, Resistance to Reform: Fernandez-Rodrik Model. Strategies: Gradualism versus Big Bang, Sequencing of Reform in the presence of Political Constraints

Module 3: The Transition Experience: Macroeconomic Assessment & Lessons (15 Hours)

From Plan to Market: Understanding transition, the challenge of transition, the challenge of consolidation; Broad Lessons from Transition Experience based on the experience of select countries.

Module 4: Democratic Politics and Economic Reforms in India (15 Hours)

The Evolution of Economic Reform in India: An Overview of Macroeconomic Policies and Performance since 1991, Political Institutions: Federalism, Informal Networks and the Management of Dissent; Political Skills: Introducing Reforms by Stealth

References:

Essential Readings

1. Haggard S and S. Webb, Voting For Reform, World Bank, OUP, 1994 (Module 1)
2. Haggard S. and R. Kaufman, The Political Economy of Democratic Transitions, Princeton University Press, UK, 1995 (Module 1)
3. Sturzenegger F. and M. Tommasi, The Political Economy of Reform, The MIT Press, Cambridge, MIT, 1998 (Module 2)
4. Jenkins R, Democratic Politics and Economic Reform in India, Cambridge University Press, 1999 (Module 4)
5. World Development Report, From Plan To Market, World Bank, 1996 (Module 3)

Urban Infrastructure Finance (ECO 226)

Number of Credits: 2

Pattern of Evaluation: Standard

Preamble: It is well recognized that infrastructure in general and urban infrastructure, in particular, poses several challenges. The course is designed to acquaint the students with the current state of affairs in the Indian context. The existing gap in the demand and supply of infrastructure has to be addressed in various ways. The students will learn the standard financing methods as well as variants in the realm of PPP. Some novel emerging ideas and practices such as SDOs and Pooled Fund approaches will also be treated.

Course Outcomes for Urban Infrastructure Finance (ECO 226)

- CO1: Acquaint the students with the current state of urban infrastructure the Indian context.
- CO2: Analyze the existing gap in the demand and supply of urban infrastructure finance
- CO3: Provide understanding of the standard financing methods as well as variants in the realm of PPP
- CO4: Evaluate the emerging ideas and practices such as SDOs and Pooled Fund approaches in the area of financing urban infrastructure.

Module 1: Concept, Status and Delivery Mechanisms (15 Hours)

Concept of Infrastructure – physical /social and soft – Provision of infrastructure by local bodies – Para-statals – Core/obligatory services – LPGs and extended version and actual status in urban India with specific reference to Maharashtra

Module 2: Financing Infrastructure (15 Hours)

Financing infrastructure: the capacity of local bodies – user prices. Alternative methods – Bonds, Banks, Structured Debt Obligations (SDOs), Pooled funding, Revolving Fund – Case studies in India and abroad – Tamil Nadu Urban Development Fund (TNUDF)

References:

Essential Readings

1. India Infrastructure Reports (Chapters related to Urban Infrastructure)
2. Bahl, R and J. Linn, Urban Public Finance in Developing Countries, OUP (World Bank), 1992.
3. Singh, K and B. Tai (eds.), Financing and Pricing of Urban Infrastructure, New Age International, New Delhi, 2000.

Additional Readings

1. Working papers of the Vibhooti Shukla Unit
2. Henderson, J.V. and J.F. Thisse (eds), Handbook of Urban and Regional Economics, Elsevier Science, 2006.

Regional Economics Theory and Methods (ECO 227)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: The course would provide a basic understanding of the main concepts, issues, problems and techniques in regional planning. Interregional trade will be dealt with in the context of regions within a nation. It would help in understanding and analyzing regional growth disparities in India.

Course Outcomes for Regional Economics Theory and Methods (ECO 227)

- CO1: Provide basic understanding of the main concepts, issues in regional planning. Interregional trade
- CO2: Examine the main problems and techniques in regional planning and interregional trade within the contexts of regions within a nation
- CO3: Understand the issues related to regional growth disparities in India
- CO4: Analyze the policy framework undertaken to address these issues of growth disparities.

Module 1: Regional Growth (20 Hours)

Meaning of regional growth, *Growth theories*: the neo-classical perspective, export demand models, agglomeration and cumulative growth process. *Inter-regional Trade: Regional trade specialization*: the Ricardian explanation, the factor proportion explanation, *Modern theories of regional trade*: Intra-industry trade, competitive advantage and regional trade, new economic models of trade.

Module 2: Regional Migration (10 Hours)

Factor Migration: the classical theory of labour migration, *Alternatives*: the human capital model, the job search model, the gravity model. Disparities in Regional Unemployment

Module 3: Regional Policy (10 Hours)

Macro policy Instruments: Fiscal policy, regional aspects of taxation and government expenditure, monetary policy, import control, devolution and regional policy. *Micro Policy Instruments*: Reallocation of labour, capital

Module 4: Evaluation of Regional Policy (20 Hours)

Measuring regional disparities, regional development indices, use of composite index, econometric models, regional input output multipliers, principal component analysis, DEA etc. –case studies

References:

Essential Readings

1. Armstrong, Harvey and Jim Taylor (2004) *Regional Economics and Policy* (3rd edition) Blackwell Publishing, UK. (Module 1,2,3)
2. McCann, Philip (2001) *Urban and Regional Economics* Oxford University Press, UK.(Module 4).
3. Ramanathan, R (2003) *An Introduction to Data Envelopment Analysis A tool for performance measurement*, Sage Publications New Delhi (Module 4).
4. Richardson, Harry (1963) *Elements of Regional Economics* Penguin Edition USA (Mod. 1)
5. Sudhanshu Shekhar (2004) *Regional Planning in India Vol I & II*, Anmol Publications PvtLtd, New Delhi. (Module 4).

Quantitative Methods in Demography (ECO 228)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: This four credit course, to be offered in the third or fourth semester, requires good understanding in Statistics/Econometrics. The course aims at enabling students to pursue further research in applied Demography.

Course Outcomes for Quantitative methods in Demography: (ECO 228)

CO1: Create awareness among students about advanced techniques used in Demography

CO2. Equip students with the knowledge on unique quantitative methods in demographic data analysis

CO3. Understand demographic models

CO4. To make students aware of indirect estimation methods

Module 1: Advanced Research Methodology (15 Hours)

Concepts in Research methods, Quantitative and Qualitative approaches in data collection, Reliability and Validity of measurement, Types of scales, Sampling frame and design. Sampling methods, Multistage sampling in Large scale surveys. Sampling and Non-sampling errors, Sample size determination.

Module 2: Quantitative Methods in Data Analysis (15 Hours)

Path models with interactions and non-linearity, Analysis of variance, Multiple Classification Analysis, Factor analysis and Principal Components Analysis, Binary Logistic regression. Multinomial logit regression: Basic form of logit model, interpretation of coefficients. Discriminant analysis, Multilevel analysis and application.

Module 3: Modelling in Demography (15 Hours)

Stable population models, Momentum of population growth. Micro-models of fertility. Models of family buildings strategies, Markov Renewal Process, Nuptiality models. Mortality models, Life Tables, Migration Models, Multi-regional Demographic Models.

Module 4: Indirect Methods (15 Hours)

Indirect methods in Fertility, Brass's Method and its modification. Indirect methods in Mortality: Estimation of Infant and child mortality by Brass methods modified by Sullivan and Trussel, Estimating Adult mortality based on stable and Generalized Population.

References:

Essential Readings

1. Blalock, Hubert M. (1960): *Social Statistics*, McGraw-Hill Book Company, New York.
2. Dillon, W.R. and Goldstein, M. (1984), *Multivariate Analysis*, Wiley and Sons, New York.
3. Kish, Leslie, (1995): *Survey Sampling*, John Wiley and Sons, Inc. New York . Preston, Samuel H. Patrick, Heuveline and Michel Guillot, 2003, *Demography: Measuring and Modelling Population Processes*, Blackwell Publishers, 2001 (First Indian Reprint 2003).

Economics of Health and Education (ECO 230)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: This elective course covers theoretical foundations of economics of health and education and also techniques of economic evaluation. These two aspects of social infrastructure are clubbed together because there is an interdependence of output and existence of large externalities in both health and education sectors. Also these are important components having critical linkages to human development through improving human capabilities and empowerment. This course aims to equip students with skills to understand and analyze the development of the health and education sectors. The emphasis will be on policy options and issues for developing countries like India but will also draw on the experience of other countries wherever relevant.

Course Outcomes for Economics of Health and Education (ECO 230)

CO1: Apply theories, concepts and techniques of economics to the health and education sectors

CO2: Understand Conceptual Foundations for economics of health and education

CO3: Understand economic dimensions of health and education system in India

CO4: Analyze education and Health Indicators and outcomes and draw inferences for policy changes.

Module 1: Economics of Health (15 Hours)

Distinction between health and health care- Nature of health care as an economic commodity- Demand for health and Supply of health- Opportunity costs and problems of rationing health care. Costs and efficiency- Costs: fixed, marginal and average costs. Efficiency - technical and allocative efficiency, and of various types of equity. Market System and health care needs- Market failure and the role of government – how insurance markets work, and how they can fail for health care

Module 2: Financing Health Care, Delivery of Health Care (15 Hours)

The economics of financing health care, different approaches taken by governments in different countries- Options for financing health care in developing countries- The rationale of government funding and regulation of health care- examining the potential role of user charges and community financing schemes. Delivery of health care -decentralization and the role of the private/public mix.-health system reforms. The future of Health Sector reforms in developing countries like India

Module 3: Economics of Education (15 Hours)

Formal and non-formal education-Special characteristics of education- Implications for economic analysis- Role of the state – Education, Productivity and Employment-Investment in education: Costs and benefits, Private and social rates of return (Human capital and Signaling theories of education)

Module 4: Indian Education System (15 Hours)

Indian Education system –Rationale of government funding and regulation of education- Alternative method of financing education- Resource allocation to primary, secondary and higher education- Efficiency, equity and distributional aspects: Implications for gender and social groups- Role of private and public sectors, Union and State governments- Special programmes for education.

References:

Essential Readings

1. Becker, G.S., Human Capital 2nd.Edn., National Bureau of Economic Research, New York, 1974
2. Cecchi, Daniel, Human Capital, Family Background and Inequality, Cambridge University Press, 2008
3. Feldstein, P. J., Health Care Economics, Wiley, 1993 (Module 1)
4. Grand, J., Propper, C and Ray Robinson, The Economics of Social Problems, Palgrave, 2002 (Modules 1 and 3)
5. Henderson, J.W, Health Economics and Policy, South-Western Thomson Learning, 2001 (Module 2)
6. Mcpake, B., L. Kumanayake and C. Normand, Health Economics: An International Perspective, Routledge, 2002. (Module 1)
7. Musgrove, P., Health Economics in Development, The World Bank, 2004 (Modules 1 and 2)
8. Panchamukhi, P. R., Economics of Health: An Introductory Review, ICSSR, 2002 (Modules 1 and 2)
9. Robinson, E.A.G. and Vaizey, J. (eds), The Economics of Education, International Economic Association, Macmillan, London, 1966 (Modules 3 and 4)
10. Tilak, J.B.G., Economics of Inequality in Education, Sage, New Delhi, 1989 (Module 4)

Applied Econometrics for Market Research and Analytics (ECO 231)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: The objective of this four credit course is to introduce students to statistical and econometric methods used in market research and analytics. The focus is on applications of techniques to real world problems using the programming language R and other software like SPSS and STATA.

Course Outcomes for Applied Econometrics for Market Research and Analytics (ECO 231)

CO1: The course will introduce students to statistical and econometric methods used in market research and analytics.

CO2: It will acquaint the students to applications of econometric techniques to real world problems

CO3: The students will learn how to use of programming language R and other software like SPSS and STATA

Module 1: Data Structures and Multivariate Methods (15 Hours)

Simple random samples- multistage surveys-biased samples-quality of survey data-data from social experiments; Multivariate methods- Factor analysis-Principal components analysis- Cluster analysis – conjoint analysis.

Module 2: Bayesian Methods (15 Hours)

Prior and Posterior distribution-Bayesian point and interval estimation- Bayesian analysis of Linear Regression-Monte Carlo integration Markov Chain Monte Carlo simulation-Gibbs sampler for SUR-data augmentation-Bayesian model selection-Practical considerations.

Module 3: Binary Outcome Models (15 Hours)

Logit and Probit models-Multinomial models-Tobit and selection models- survival models – models of multiple hazard-models of count data

Module 4: Data and Models (15 Hours)

I

Issues arising out of stratified and clustered sampling-treatment evaluation- measurement error models-missing data and imputation-multi –level and hierarchical models

References:

Essential Readings

1. Cameron A.C and P. K. Trivedi, Microeconometrics: Methods and Applications, Cambridge University Press, 2006. (All Modules).
2. Dhrymes P, Econometrics, Springer, 1974 (Module 1).
3. Crawley M, Statistics: An Introduction Using R, Wiley, 2007 (All Modules).
4. Frances P.H. and Richard Papp, Quantitative Methods in Market Research, Cambridge University Press, 2006 (Module 3)

Time Series Econometrics – I (ECO 232)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: The objective of this course is to impart the necessary econometric understanding required to model and forecast time series data. It emphasizes empirical implementation strategies as well as theoretical understanding. It is assumed that the student is familiar with basic concepts of statistical inference that are taught in the Statistical Foundations of Econometrics course. Empirical applications will emphasize the ability to write the relevant algorithms in R programming language.

Course Outcomes for Time Series Econometrics – I (ECO 232)

CO1: It will impart the necessary econometric understanding required to model and forecast time series data

CO2: It will impart empirical implementation strategies as well as theoretical understanding of time series analysis

CO3: Students will be able to write the relevant algorithms in R programming language.

Module 1: Theoretical Foundations (15 Hours)

Definition and special features of time series data-Introduction to complex numbers-AR(P)process- Random walks-Ergodicity, stationarity and covariance stationarity-Lag operators, eigenvalues and stationarity-Law of large numbers for serially dependent processes- martingale difference sequence- central limit theorem for martingale difference sequence (without proof)- distribution of OLS estimators for random walk processes- tests for Unit roots: ADF, KPSS, HEGY and Canova-Hansen

Module 2: ARIMA Models (15 Hours)

AR and Invertible MA processes –autocorrelation and partial autocorrelation functions – Yule- Walker equation- Identification of ARMA models- Estimation of ARMA models – Diagnostic testing- Forecasting

Module 3: Vector Auto Regression and Volatility (15 Hours)

Identification and Estimation in VAR models - Causality– Impulse Response Function- Variance Decomposition-Cointegration in VAR models- ARCH and GARCH models – testing for ARCH effects- FGLS estimation of ARCH(1) – ARCH in mean, EGARCH models

Module 4: Spectral Analysis (15 Hours)

Cyclical behaviour and periodicity- The spectral representation theorem- The spectral density- Periodogram and the discrete Fourier transform- parametric and non-parametric estimation of the spectrum – Cross spectrum - Bivariate Granger causality in the frequency domain

References:

Essential Readings

1. Shumway Robert and David Stoffer, Time Series Analysis and its Applications with R Examples, Springer, NY, 2006 (All Modules)
2. Hamilton James, Time Series Analysis, Princeton University Press, 1994 (All Modules)
3. Enders Walter, Applied Econometric Time Series, Wiley India, 2004 (All Modules)

Experimental Economics and Market Design (ECO 233)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: Experimental Economics has now become an established part of the discipline. The objective of this four-credit elective course is to introduce students to experimental techniques which will enable them to test economic theory in the laboratory as well as in the field.

Course Outcomes for Experimental Economics and Market Design (ECO 233)

CO1: Understand experimental methods in research in Economics

CO2: Use the game experiments in market structures

CO3: Understand experimental game theories

Module 1: Introduction to Experimental Methods (15 Hours)

Induced Value Theory-Experimental Design: Randomisation, blocking and other efficient designs-dealing with human subjects- mechanics of conducting an experiment including guidelines-data analysis and statistical testing –reporting the results

Module 2: Experiments I (15 Hours)

Games: Beauty contest game with variations- One-shot Ultimatum game- Public goods experiment – Voluntary contributions mechanisms with provision points-Productivity under group incentives

Module 3: Experiments II (15 Hours)

Market structures and price discrimination-incentive mechanism for control of monopoly- Theories of choice under uncertainty and individual decision making under uncertainty-Search decisions- Expectations and asset valuations

Module 4: Markets and Mechanisms (15 Hours)

Markets:-Classic experiments-Hayek Hypothesis-Learning in markets-Auctions: Classical theoretical and empirical results-Implementation games and mechanism design: Experimental evidence on canonical, Groves and Ledyard and Walker mechanisms

References:

Essential Readings

1. Daniel Friedman and Shyam Sunder, Experimental Methods: A Primer for Economists, Cambridge University Press, 1994 (All Modules)
2. J.H. Kagel and A.V. Roth, Handbook of Experimental Game Theory, Princeton University Press, 1997 (All Modules).

Linear Programming and Data Envelopment Analysis (ECO 234)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: The elective is useful for both industrial analysis and policy guidance in an organization. It deals with resource allocation, cost minimization, maximization of profits, accomplishing multiple goals and so on. It also helps in measuring the performances of similar units. It identifies the extent of inefficiency, the causes for inefficiency and suggests the extent to which the performance can be improved. This course will provide hands on computer for applications and analysis.

Course Outcomes for Linear Programming and Data Envelopment Analysis (ECO 234)

CO1: Awareness on linear Programming techniques

CO2: Understanding on Data Envelopment Analysis

CO3: Insight on practical application in related fields

Module 1: Linear Programming (15 Hours)

Formulation, the graphical method, the simplex method, duality, degeneracy, sensitivity analysis Special linear programming problems – the assignment problem, transportation problem, linear programming and game theory, linear programming and input output.

Module 2: Extensions in Linear Programming (15 Hours)

The decomposition method, goal programming- relationships between goal programming and management science /operations research / multiple criteria decision making

Module 3: Concepts of Data Envelopment Analysis (DEA) (15 Hours)

Basic Concepts: A Decision-Making Unit; Measurement of Efficiency; Frontier Analysis, Mathematical Programming Aspects of DEA: Fractional DEA programme – use of Linear Programming; primal & dual in the format required for DEA; output- maximization and input- minimization DEA models

Module 4: Applications (15 Hours)

Economies of Scale: Variable and Constant Returns to Scale and DEA; Technical and scale efficiencies; Computer applications using industry data; Extensions in DEA: Malmquist Productivity Index, Use of Regressions and sensitivity analysis in DEA.
Practical applications using sectoral data

References:

Essential Readings

5. Dorfman R, Paul Samuelson and Robert Solow, Linear programming and Economic Analysis, McGraw- Hill Book company, Inc New York, 1958 (Module 1, 2)
6. James P Ignizio, Goal Programming and Extensions, Lexington Books, D.C Health and Company, Lexington, 1976 (Module 2)
7. N.Paul Loomba, Linear Programming: An Introductory Analysis, Tata McGraw –Hill publishing Company Ltd Bombay-New Delhi, 1964 (Module 1, 2)
8. N.Paul Loomba, Efraim Turban, Applied Programming for Management, Holt, Rinehart & Winston, Inc.New York, 1974 (Module 1, 2, 3)
9. Ramanathan R, An Introduction to Data Envelopment Analysis A Tool for Performance Measurement, Sage Publications New Delhi, 2003 (Module 3, 4)
10. Ray Subhash, Data Envelopment Analysis Theory and Techniques for Economics and Operations Research, Cambridge University Press, UK, 2004 (Module 3, 4)
11. Tim Coelli - DEAP - Data Envelopment Analysis (Computer) Programme, Centre for Efficiency and Productivity Analysis, Department of Econometrics, University of England, Armidale, Australia (Module 3, 4)

Urban Governance and Infrastructure Issues in India (ECO 235)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: Urbanization is fairly recognized as a driver of Economic growth generally as well as in India. Urban Infrastructure is equally well recognized as the *numero uno* problem that needs serious attention. The course begins by familiarizing the students with the concept and components of Infrastructure and gives a feel for the status and deficit thereof. This course seeks to contextualize urban governance within the fiscal federal structure of India with special emphasis on decentralization. The discussion of 74th Constitutional Amendment is followed by the assessment of the strengths and weaknesses of ULBs. The attempts and approaches at addressing the issues related to infrastructure finance are then studied and the students are made aware of the emerging new financial tools. Whilst the general tone will be relevant to Pan India, illustrations will be drawn from Maharashtra and MMR. The students will be presumed to be familiar with the subject matter covered in the elective course in ‘Urban Economics’.

Course Outcomes for Urban Governance and Infrastructure Issues in India (ECO 235)

- CO1: Contextualize urban governance within the fiscal federal structure of India with special emphasis on decentralization
- CO2: Understand the issues related to infrastructure finance
- CO3: Awareness of the emerging new financial tools.

Module 1: Concept and Components of Infrastructure (15 Hours)

Concept of Infrastructure-physical/social/soft; Components of Infrastructure – transport/communication/power/ water and sanitation/health/education/housing/media – infotainment-heritage-culture/governance; Status and Deficit and urban infrastructure in India.

Module 2: Contextualizing Urban Governance (15 Hours)

Indian Fiscal Federal Structure – Finance Commission-Decentralization – 74th CAA, details and critique – 12th schedule – State Finance Commission – The Municipal Acts – mandates, obligatory and discretionary functions Municipal finances appraisal and critique.

Module 3: Urban Governance Conundrum and Illustrations (MMR) (15 Hours)

Issues in Urban Governance-Parastatals – structure and functioning – capacity building, role of civil society; Land Market management and affordable housing; - JNNURM (viability gap funding and basic facilities)

Module 4: Financing Urban Infrastructure (15 Hours)

Internal resources of ULBs, Bank funding; SDOs, Pooled fund (classical and modified), Capital market access (muni-bonds), PPP and variants, TNUDF and water aggregating models.

References:

Essential Readings

1. India Infrastructure Reports (Especially Rakesh Mohan, Urban Infrastructure, Business Models, and Land Management).
2. VSC WPS (Especially WP Nos. 1-3, 5, 7, 8, 10, 11, 15, 16, 20, 23-25, 28, 30, 31).

Multiple Linear Regression and its Extensions (ECO 236)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: The Objective of the four credit course is to acquaint students with the theory and practice of multiple linear regression, along with an understanding of the implications and remedial measures associated with the failure of its assumptions.

Evaluation Pattern: The mid semester examination will be replaced by four examinations of 10 marks each. These examinations will emphasize the ability to apply theoretical knowledge to the real world. One examination will be conducted after teaching for each module is completed. This will be followed by the end semester examination of 60 marks.

Course Outcomes for Multiple Linear Regression and its Extensions (ECO 236)

CO1: It will acquaint students with the theory and practice of multiple linear regression

CO2: It will impart the theoretical understanding of Maximum Likelihood Estimators and Generalised Method of Moments estimator.

CO3: Students will develop a very good understanding of the implementation of Panel Regression and Logistic Regressions using R or Python

Module 1: The K-variable Linear Regression Model (15 Hours)

Matrix formulation of the model-partial correlation coefficients-inference and prediction in the K variable model.

Module 2: GLS Estimation of the Multiple Linear Regression (15 Hours)

Tests for heteroskedasticity and FGLS estimation in the presence of heteroskedasticity-Tests for autocorrelation and GLS estimation in the presence of autocorrelation-Multicollinearity- implications and remedial measures.

Module 3: Specification Errors and Tests (15 Hours)

Types of specification errors and their implications-Model Evaluation and Diagnostic Tests- Tests of Parameter Constancy-Tests for Structural Change-Nested and Non-nested models-heterogeneity and non-linearity.

Module 4: Alternative Estimations Techniques (15 Hours)

Instrumental variables and their properties-non-linear regression –quantile regression- introduction to non-parametric regression-method of moments and OLS as a method of moments problem-GMM estimators and their distribution

References:

Essential Readings

1. Johnston J and J. DiNardo, Econometric Methods, McGraw Hill International Edition, 2007(all modules)
2. Greene, W. Econometric Analysis, Pearson, 2003 (all modules)

Banking: Theory and Policy (ECO 237)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: The objective of the course is to introduce students to the different aspects of commercial banking theory and policy over 48 lectures. The course would discuss the evolution of different kinds of financial systems, the importance of financial intermediaries and the bank as an important financial intermediary. The course would also deal with issues regarding competition in banking, the need for prudential regulation and would discuss the structure of banking in India along with a focus on the role of banks in aiding financial inclusion and as a support for the microfinance institutions.

Course Outcomes for Banking: Theory and Policy (ECO 237)

- CO1: Highlight the evolution of different types of financial systems and the role of commercial banks as an important financial intermediary.
- CO2: Elucidate on competition in banking and significance of prudential regulation in commercial banking and its impact on financial stability
- CO3: Discussion on the current issues in Indian banking makes the course application oriented.

Module 1: Introduction (15 Hours)

Evolution of financial systems (bank oriented and market oriented systems) – Sources and Uses of Funds – need for financial intermediaries – banking in general equilibrium theory

Module 2: Competition in Banking (15 Hours)

Competition and Networks (unitary and branch banking) – Effect on reputation and risk taking – Competition and Financial Stability

Module 3: Banking Regulation (15 Hours)

Banking Crises/Bank Panics - Need and Scope for prudential regulation – Micro and Macro prudential indicators – Risk-based regulatory capital – Deposit Insurance – Universal Banking

Module 4: Indian Banking (15 Hours)

Structure of the banking system – Changes in priority sector lending – Performance of public sector banks in the post reform period – recent developments in banking: electronic banking, relationship banking: collateral lending, SARFESI – Financial Inclusion – Microfinance institutions

References:

Essential Readings

1. Allen, F. and D. Gale, *Comparing Financial Systems*, The MIT Press, Cambridge, Massachusetts, 2001
2. Freixas, X. and J. Rochet, *Microeconomics of Banking*, The MIT Press, Cambridge, Massachusetts, 1999.
3. Berger, A., P. Molyneux and J. Wilson, *The Oxford Handbook of Banking*, Oxford University Press, New York., 2010
4. Ramakrishna, G. and K. Rao, *Performance of Public Sector Banks After Reforms*, Serials Publications, New Delhi, 2008
5. Ghate, P., *Indian Microfinance: The Challenges of Rapid Growth*, Sage, New Delhi, 2007

Additional Readings

1. Hardy D.C. and Pazarbasioglu, C., Leading Indicators of Banking Crises: Was Asia Different? *International Monetary Fund Working Paper*, 1998
2. Polizatto, V.P., Prudential Regulation and Banking Supervision: Building an Institutional Framework for Banks, *World Banking Working Paper WPS 340*, 1990
3. Berger A.N. and G.F. Udell Relationship Lending and Lines of Credit in Small Firm Finance, *Journal of Business*, vol.68, no.3, pp.351-81, 1995
4. Reserve Bank of India Bulletins (various issues).

Survival Analysis (ECO 238)

Number of Credits: 2

Pattern of Evaluation: -Standard

Preamble: Survival analysis is applied to data that specifies the time elapsed until an event. It is a mathematical tool of data analysis with wide applications for the study of censored data. Survival analysis can be applied to any branch of Economics to understand the event which includes the transition from failure to success. The objective of the course is to introduce students to survival analysis as a tool for data analysis both in theory and practice with the use of software packages like SPSS and STATA.

Course Outcome for Survival Analysis (ECO 238)

CO1: Acquiring insights on unique probability distribution

CO2: Awareness on life – history approaches

CO3: Developing modes and its practical applications.

Module 1: Probability Theory and Its Applications in Survival Analysis (15 Hours) Fundamental Theorems of Probability, Mathematical Expectation and Moments, Probability distribution; Discrete and continuous, Duration Models, Functions of Survival Analysis, Survival Time, Non-parametric Approach to Survival Analysis Kaplan-Meier Estimate of Survival Function, Product Limit Life Table, Estimate with Censored Time

Module 2: Life History Analysis (15 Hours)

Life-History Analysis, Comparison of Survival Distributions, Parametric Approach to Survival Analysis, Cox Proportional Hazard Model-Basic form of Hazard model, Interactions, Calculation of Life Table from the Proportional Hazard model, Inference and Goodness of Fit. Survival Models-Hazard models with Time Dependence, Time dependent Predictor Variables and Coefficients.

References:

Essential Readings

1. Hogg V Robert, Joseph W. McKean and Allen T. Craig, Introduction to Mathematical Statistics, Dorling Kindersely (India) Pvt. Ltd. New Delhi, 2006
2. R.D. Rutherford and Minja Choe, Statistical Models for Causal Analysis, John Wiley and Sons Inc. New York, 2003
3. Lee E.T, Statistical Methods for Survival Data Analysis, John Wiley & Sons Inc., New York, 1992

Economics of Social Infrastructure (ECO 239)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: This is a basic course which will provide a theoretical framework required to examine the issues related to social infrastructure. This paper covers theoretical foundations of Economics of Social Infrastructure and techniques of economic evaluation. The different components of social infrastructure have critical linkages to human development through improving human capabilities and empowerment. Hence, the paper aims to equip students with skills to understand and analyze these linkages. There will be emphasis on policy options and issues for India but will also draw on the experience of other developing countries where relevant.

Course Outcomes for Economics of Social Infrastructure (ECO 239)

- CO1: Understand the theoretical framework required to examine the issues related to social infrastructure
- CO2: Examine the theoretical foundations of Economics of Social Infrastructure
- CO3: Understand and apply techniques of economic evaluation of social infrastructure.
- CO4: Analyze the critical linkages that different components of social infrastructure have with human development through improving human capabilities and empowerment

Module 1: Approaches to Social Infrastructure (15 Hours)

Human Resource Development and Human Development: Differences and Linkages, Measurement of Human Development - Special Characteristics of health, nutrition education and environment- Externalities and Role of the State - Utilitarianism, Rawls, Arrow and Amartya Sen- Social Infrastructure and Economic Growth.

Module 2: Human Capital – Theory of Human Capital (15 Hours)

Consumption and Investment Aspects – Rates of Return and their Measurement – Issues and Limitations – Human Capital and Growth Theories-Concept of Social Capital: Role and Policy Implications.

Module 3: Economics of Infrastructure with Special Reference to Health, Nutrition Education and Environment: (15 Hours)

Economics of Nutrition: Characterization and measurement of under nutrition-Linkages with Morbidity, Mortality- Implications for Economic Analysis. Health: Determinants of Health Status- – Cost-Benefit and Cost-Effectiveness Approaches-Education, Productivity and Employment—Development, environment and the role of economic analysis- Economic Measurement of environmental impacts

Module 4: Social Sector Policies in India (15 Hours)

Policy Framework in Five-Year Plans – Economic Reforms and Social Sectors - Typology of Economic Growth and Human Development in Indian States – Trends and Disparities in Social Infrastructure Development – Role of Public and Private Sectors – Financing of Social Sectors - Pricing of Social Sectors – Social Attainment – Limitations of Policy – Social Security: International Comparison– Special Policy Issues.

References:

Essential Readings

1. Becker, Gary S., Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education, Second Edition, New York: Columbia University Press, 1975 (Module 2)
2. Chelliah, Raja J. and R. Sudarshan (ed.), Income Poverty and Beyond: Human Development in India, UNDP, Social Science Press, New Delhi, 1999 (Modules 1 and 4)
3. Ehtisham A., (ed.) Social Security in Developing Countries, Oxford University Press, New Delhi, 1999 (Module 4)
4. Dixon et al, Economic Analysis of Environmental Impacts, The World Bank. Earthscan Publications Ltd, London, 1994
5. Feldstein, P. J., Health Care Economics, Wiley, 1993 (Module 3)
6. Fukuda-Parr S. and Shiva Kumar A. K. (ed.), Readings in Human Development: Concepts, Measures and Policies for a Development Paradigm, Oxford University Press, New Delhi, 2003 (Module 1)
7. Gillespie S. and Hadda, L., The Double Burden of Malnutrition in Asia, Sage, 2003 (Modules 1 and 3)
8. Henderson, J.W., Health Economics and Policy, South –Western, Thomson, 2001 (Module 3)
9. Richard, P., G. Layard and S. Glaister, Cost Benefit Analysis, Cambridge University Press, 1994
10. Ray, D., Development Economics, Princeton University Press, 1997 (Module 2)
11. Sen, A., Development as Freedom, Oxford University Press, New Delhi, 1999 (Module 3)
12. Sen, A. and J. Dreze, India: Economic Development and Social Opportunity, Oxford University Press, New Delhi, 1998 (Module 4)
13. Sen, A. Commodities and Capabilities, Oxford India Paperbacks, New Delhi, 2002 (Module 1)
14. Svedberg, P., Poverty and Under Nutrition Theory Measurement and Policy, Oxford University Press, New Delhi, 2002 (Modules 1 and 3)
15. Tendulkar Committee's Report on Poverty Estimates for India, 2009.(GOI)

Environmental Economics (ECO 240)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: This course is designed to introduce students to key contemporary issues in environmental economics and equip them with the tools and methodologies that are in general applied to analyze environmental problems and policies. An attempt will be made to discuss the currently debated environmental problems and policies in India and other countries.

Course Outcomes for Environmental Economics (ECO 240)

CO1: Understand the interrelationships between economic development and the environment, converging on to notions of sustainable development

CO2: Understand and analyse the issue of common pool environmental resources in global, regional and local eco-system contexts.

CO3: Apply theories, concepts and techniques of economics for the evaluation of environmental projects

CO4: Understand and apply supplementary analytical Tools in the environmental framework.

Module 1: Economic Growth and the Environment (15 Hours)

Economic Growth and environment, Limits to growth and Sustainable Development, Environmental Kuznets Curve- Environment as an economic and social good/asset, Natural Resources (Exhaustible, renewable, common property resources) - Accounting and Natural Resource Management- Green Accounting

Module 2: Micro foundations of Environmental Economics (15 Hours)

Types of goods and services - Public, private and common pool resources, externalities and market failure, Social Cost- Benefit- Analysis, Pollution as a Public Bad, The equi-marginal principle-Economic efficiency versus equity, Damage functions and abatement costs, Role of Institutions in environmental protection, Coase Theorem.

Module 3: Supplementary Analytical Tools and Environmental Issues (15 Hours)

Valuation of Natural Resources: Direct and Indirect Methods Environmental impact assessment, Life Cycle Analysis, Pollution- Air, Water and Noise; Regional, National and Supranational dimensions of environmental degradation, Ozone Layer Depletion, Green House Gas Emissions, Global Warming, and Climate Change

Module 4: Environmental Policy and Practices (15 Hours)

Few approaches to environmental policy: *Command and control - Environmental Standards, Technology Mandates; Market based instruments - Taxes, subsidies, liability instruments tradable permits; Rehabilitation and Resettlement Policy- Kyoto Protocol; Rio debate- Relevant Case Studies*

References:

Essential Readings

1. Dixon, J. A., and M. M. Hufschmidt, (ed.) Economic valuation techniques for the environment: A Case Study Workbook. Baltimore: Johns Hopkins University, 1986
2. Field, B.C., Environmental Economics- An Introduction, McGraw-Hill International Edition, Singapore, 1997
3. Hodge, I. Environmental Economics, MacMillan Press Ltd., London, 1995
4. Jeroen C.J.M. van den Bergh, Handbook of Environmental and Resource Economics, Edward Elgar Publishing, 2002
5. Jinhua, Z. and T. Fisher, Notes on Irreversibility, Sustainability and the Limits to Growth, <http://econpapers.repec.org/paper/isugenres/default22.htm>

6. Kolstad, C., Environmental Economics, Oxford University Press, USA, 2006
7. Sankar, U., Policy Instruments For Achieving Low Carbon and High Economic Growth in India (Monograph), National Institute of Public Finance and Policy, New Delhi, 2009
8. United Nations Statistical Division: System of Environmental-Economic Accounts (SEEA)
<http://unstats.un.org/unsd/envaccounting/seearev>

Economics of Services (ECO 241)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: The objective of the course is to bring an understanding of the economics of services to students. The course deals with various microeconomic and macroeconomic aspects of the service economy. The course includes empirical studies on trade in services and macroeconomic dynamics in services sector growth in India. The discussion on sectoral and sub-sectoral services would be in the formal-informal sector perspective wherever applicable.

Course Outcomes for Economics of Services (ECO 241)

CO1: Demonstrate knowledge and understanding of theories and models in services economics.

CO2: Utilise the knowledge in generalising various sub-sectors in services.

CO3: Use knowledge to seek problem-solving in actual services sectors.

CO4: Prepare and present a critique of the key economic issues in the services sector.

CO5: Identity/recall the key issues in the services sector in an economy.

Module 1: Introduction to Economics of Services: (15 Hours)

Concept of service- Attributes of service, Main types of services and their classification, service- goods relationship, economic services; Rural-Urban Services-dualism Services Economy- Concept and its role in the development Knowledge Economy- Concept and Characteristics, Innovation and R&D. Theory of Unbalanced Growth, Fisher-Clark hypothesis, Fuchs model of the inter-sectoral shift in employment, Gemmell's extension of Fuchs' model, Neo-Industrial Theory of Self-Services

Module 2: Value and Pricing of Services and Measurement of Service Output (15 Hours)

Calculation of the value of a service product, the definition of a unit of service, characteristics of non-market services.

Service production and distribution costs, the basic trade-off and derivation of the supply-system cost function, optimal charges for services.

The provision of services in a market economy, Fee-price of service, Subscription Businessmodel Measurement of output and productivity in the services sector; issues and measures

Module 3: Trade in Services (15 Hours)

Characteristics of Trade in Services- Melvin Approach to Trade in Services, Jones and Ruane theory of trade in services; Barriers to trade in services and Methods to measure them; World trade in Services- General Agreement on Trade in Services (GATS); India's trade policy and Trade in Services

Module 4: Services Sector in India (15 Hours)

Dynamics of services sector growth in India, Three-sector hypothesis and India, Role of the service sector in Indian Economy, Decomposition of Services sector growth in India and its implications. Employment in Services Sector-a gender perspective, Business Services, Telecommunications, Tourism, IT and ITES in India. FDI in services, Public Policy and services- Service Tax in India, Goods and Service Tax, Public Private Partnerships in Services

References:

Essential Readings

1. Akehurst, G. and J. Gadrey, *The Economics of Services*, Routledge, 1998 (Modules 1 and 2)
2. Chanda, R., *Trade in Services and India: Prospects and Strategies*, Wiley India, 2006 (Module 3)
3. Chanda, R., *Globalization of Services: India's Opportunities and Constraints*, Oxford University Press, New Delhi, 2002 (Module 3)
4. Jansson, J. O., *The Economics of Services, Development and Policy*, Edward Elgar Publishing, 2006 (Module 1 and 2)
5. *Economic Census of India (Latest)*

Additional Readings

1. Baumol, W.J., Blackman, S.A. Batey and Wolff, E.N., *Unbalanced Growth Revisited: Asymptotic Stagnancy and New Evidence*. *American Economic Review* 75:806-17, 1985.
2. Fuchs, V., *Economic Growth and the Rise of Service Employment*, Prepared for conference *Towards Explaining Economic Growth*, Institute of World Economics, Kiel, Federal Republic of Germany, 1980
3. Glasmeier, A. and Howland, M., *Service-led Rural Development: Definitions, Theories and Empirical Evidence*, *International Regional Science Review*, 16, 197-229, 1994
4. Gordon, J. and P. Gupta, *Understanding India's Services Revolution*, IMF Working Paper WP/04/171, September, 2004
5. Hindley, B. and A. Smith, *Comparative Advantage and Trade in Services*, *World Economy*, December, 7(4), 369-89, 1984
6. Mattoo, A., R. Rathindran, and A. Subramanian, *Measuring Services Trade Liberalization and Its impact on Economic Growth: An Illustration*. Policy Research Working Papers. No.2655, The World Bank, Washington, D.C., 2001
7. Melvin, J. R., *Trade in Producer Services: A Heckscher-Ohlin Approach*, *Journal of Political Economy*, 97(5), October, 1180-1196, 1989
8. Seth, V. K., *Economics of Services*, Ane Books India, 2007
9. Triplett, J. E. and B.P. Bosworth, *Productivity in the Services Sector*. In R. M. Stern, ed., *Services in the International Economy*. Ann Arbor: University of Michigan Press, 2001

Health Economics (ECO 242)

Number of Credits: 4

Pattern of Evaluation: Standard

Note: Students who opt for this course cannot opt for the Elective on Economics of Health and Education.

Preamble: This course provides the theoretical foundations and economic evaluation of Health Economics. The main focus is understanding health issues and policies from a developmental perspective relating specifically to the financing, delivery, and efficiency of health systems. The course also attempts to evaluate policies in the context of the market versus State provision of healthcare.

Course Outcomes for Health Economics: (ECO 242)

CO1: Apply theories, concepts and techniques of economics to the health sector

CO2: Understand Conceptual Foundations for health utility measurement-Preference based measures of health

CO3: Understand the economic dimensions of the health system in India

CO4: Analyze Health Indicators and outcomes and draw inferences for policy changes

Module 1: Economics of Health (15 Hours)

The distinction between health and health care - Determinants of health - Health Accounts: sources of health expenditure; providers of health care and health expenditure by functions - Health care and its linkages with poverty, nutrition; morbidity and mortality- Demand and Supply of healthcare - Opportunity costs and problems of rationing- health care-Costs and efficiency- Types of equity. - Markets vs State.

Module 2: Financing Health Care and Delivery of Health Care (15 Hours)

Economics of financing health care - Financing options- The rationale of government funding and regulation of health care- user charges and community financing schemes – issues of affordability and accessibility-Delivery of health care–Models of decentralization - private/public mix. Private and Public Health Insurance – Formal and informal sectors.

Module 3: Evaluation of Health Care (15 Hours)

Conceptual Foundations for health utility measurement-Preference based measures of health- Contingent valuation in health- Discrete choice experiments in health economics- stages and Validity of discrete choice variables. Economic evaluation in health care-Cost-effectiveness analysis- Decision rules in economic evaluation.

Module 4: Health Approaches in India (15 Hours)

Economic dimensions of the health system in India-Health Indicators and outcomes - Nutritional concerns –Role of government in health care-Equity issues in health and health care systems - Social and gender inequalities - Social security measures-Health care in India- Health and population policies- Health sector reforms in India.

References:

Essential Readings

1. Jones, A.M. (ed.), The Elgar Companion to Health Economics, Edward Elgar, USA, 2006 (Modules 3 and 4)
2. Glied S. and P.C. Smith (ed.) The Oxford Handbook of Health Economics, New York, 2011 (Modules 3 and 4)
3. Henderson, J.W., Health Economics and Policy, South –Western, Thomson Learning, 2001. Chapters: 2 and 3 (Module 2)
4. Mcpake, B., L. Kumanayake and C. Normand, Health Economics: An International Perspective, Routledge, 2002 (Module 1)
5. Musgrove, P., Health Economics in Development, 2004 The World bank. Chapters: 2,3,4,9 and 10 (Modules 1 and 2)
6. Panchamukhi, P. R., Economics of Health: An Introductory Review, ICSSR, 2002 (Modules 1 and 2)
7. World Health Organization A System of Health Accounts, 2011
8. National Health Accounts-India: 2004-05, http://www.whoindia.org/LinkFiles/Health_Finance_National_Health_Accounts_2004-05.pdf

Cities, Citizens and Cinema (ECO 243)

Number of Credits: 2

Pattern of Evaluation: Non-Standard

Preamble: This Elective is an attempt to examine issues of cities and citizens across both time and space through a visual analytical perspective. It is envisaged that this course will integrate theoretical as well as empirical perceptions in the concrete reality of how cinema-citizens have articulated several issues through various portrayals of and within the city. The investigation of economic aspects of citification and metropolitanisation is specifically located in the city of Mumbai/Bombay, and is based on the dialectical relationship between both cause and effect, and also between imagery and reality. It is preferred that students opting for this course have basic knowledge of urban issues.

The course will be divided into three equal phases – the first 8 lecture-hours for collective reading and discussions, the second for Lecture-demonstrations by several visual documentators and chroniclers of identified city economic issues, and the last for formal supervised writing of an assignment based on an integration of the first two phases. Students opting for this course can either analyse a particular issue across several articulations, or several inter-linked issues within specific cinematic materialisations. For instance, migration can be examined regarding the treatment of the issues across selected documentaries, or a single documentation can be critiqued through an investigation of combined issues of migration, displacement, and poverty.

Module 1: (15 Hours)

Labour patterns and conditions of work

Migration and displacement

Module 2: (15 Hours)

Marginalisation and exclusion

Ghettoisation, settlements and neighbourhoods

Poverty and destitution

References:

Select Readings

1. D'Monte, D., Ripping the Fabric: The Decline of Mumbai and Its Mills, OUP, 2002
2. Goklusing, K. Moti and W. Dissanayake (ed.), Popular Culture in a Globalised India, Routledge, 2008.
3. Harvey, D., Social Justice and the City, University of Georgia Press, 2009
4. Jacobs, J., Cities and the Wealth of Nations, Random House, New York, 1984
5. Majumdar, R., Bombay Cinema – An Archive of the City, Permanent Black, 200.
6. Mennel, B., Cities and Cinema, Routledge, 2008
7. Menon, M. and N. Adarkar, One Hundred Years, One Hundred Voices: the Millworkers of Girangaon: An Oral History, Seagull, Calcutta, 2004
8. Sengupta, A., Reports on Unorganised Sector, The National Commission for Enterprises in Informal Sector, New Delhi (2006, 2009).

Selected Cinema (Indicative)

1. Arrival: Mani Kaul
2. Seven Isles: Films Division
3. Bombay Our City/Hamara Shahar : Anand Patwardhan
4. The City Beautiful: Rahul Roy
5. Seven Islands and a Metro: Madhushree Dutta
6. Roger and Me: Michael Moore
7. Jari Mari – Of Cloth and Other Stories: Surabhi Sharma
8. Bombay Workers: Vincent Derours and Dominiwue Henry
9. A dollar a Day: Bombay Jungle: BBC

Core References

1. Bhaduri, Amit, The Economics Structure of Backward Agriculture, Academic Press, London and New York, 1983
2. Dewan, Ritu Political economy of Agrarian Reforms in India: Nexus with surplus Extraction, Himalaya Publishing House, Mumbai, 1991
3. Harvey, D., The New Imperialism, OUP, Oxford, 2005
4. Patnaik, U., Agrarian Relations and Accumulation-the Mode of Production Debate, Sameeksha Trust/OUP, 1990
5. Patnaik, U., The Agrarian Question in Marx and His Successors, Leftword Books, 2007

Metropolitan Finance and Governance in India¹ (ECO 244)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: Metropolitan Regions are gaining prominence in India as drivers of economic growth. However, these metropolitan regions face considerable challenges in terms of providing infrastructure and necessary public goods to the population. This course intends to introduce students to the essential aspects of metropolitan (public) finance and the nature of metropolitan governance in India. It begins by providing an exposure to the issues related to metropolitan economies, governments and the basic theory of metropolitan public finance. It then introduces the theory on metropolitan governance and the experience of metropolitan governance in India. Students are then acquainted with metropolitan public finance practices in some developing countries. Finally, the course highlights the complexities and policy debates related to urban land governance and management in metropolitan regions in India. The course is heavy on expected reading requirements.

Course Outcomes for Metropolitan Finance and Governance in India (ECO 244)

C01: Understand the nature of urbanization (spatial) in India

C02: Understand the meaning of Metropolitan from theoretical perspective

C03: Understand the importance of Metropolitan Regions vis-à-vis cities

C04: Appreciate the need for adopting metropolitan lens from an economic viewpoint

C05: Need for designing governance structure and best practices globally.

Module 1: Primer on Metropolitan Regions: Economics, Government, Finance (15 Hours)

An overview of metropolitan of issues related to metropolitan economy, government and public finance including grant financing and capital financing. [BLW chapters 1, 2, 3, 4, 6, 9, 13, 15]

Module 2: Metropolitan governance (theory and illustrations from India) (15 Hours)

Conceptual understanding of governance – new institutional economics - transactions cost analysis - consolidation versus polycentricity – governance in India's metropolitan regions. (VSU WP, CPRR)

Module 3: Metropolitan Public Finance (developing countries' experience) (15 Hours)

Policy and Administrative Issues – Case Studies of related to China, Sao Paulo, and Mumbai. [BLW chapters 10, 11, 12, 14]

Module 4: Urban Land Management (15 Hours)

Management of public land – extant practices – land acquisition – Urban Land-Use Planning and outcomes – Introduction of tools for land value capture (Monetization/ Land based Fiscal Tools). [WP/SR-WB, MELs, LBFT]

References:

Essential Readings

1. Bahl, R., J. Linn, and D. Wetzel [BLW] (Eds.) (2013). Financing Metropolitan Governments in Developing Countries, Lincoln Institute of Land Policy.
2. Centre for Policy Research Report [CPRR]: Metropolitan Governance Mega-Cities in India
3. VSU WP numbers: 15, 16, 24, 25, 38, 41, 43, 44.
4. WPs and Synthesis Report prepared for the World Bank on Urban Land Management in Mumbai. [WP/SR-WB]
5. Monetizing Excess Land Study: WB- IDF, George Peterson et al. [MELS]
6. Land Based Fiscal Tools in India, NCAER/GOI: V.K. Phatak [LBFT]
7. Involuntary Re-Settlements Sourcebook: A Planning and Implementation Good Practice Source Book, ADB, November 2012,

¹ Expected pre-requisites: Understanding of Urban Economics/Issues, at the level of Urban Economics Course taught in semester III.

Data Mining (ECO 245)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: This paper is designed to learn advance concepts which are applied for economic modelling. The basic understanding of mathematics, statistics and exposure to R software is prerequisite of this course.

Course Outcomes for Data mining (ECO 245)

CO1: Ability to understand and execute techniques of data mining in the context of real-world problems.

CO2: Ability to execute techniques of data mining in the context of real world

Module 1: Introduction to Economic Modelling (15 Hours)

Foundation of economic modelling, Pattern mining and analysis, Clustering and classification methods, Random forest algorithms.

Module 2: Computational Methods for Economic Modelling (15 Hours)

Artificial Neural Networks, Support Vector Machines, Autoassociative Networks, Rough Sets, Incremental Learning, Multi-agent Systems, Genetic Algorithms, Particle Swarm Optimization and Control Systems.

Module 3: Neural Approaches to Economic Modelling (15 Hours)

Multi-layer Perceptron (MLP) Neural Networks, Radial-Basis Function (RBF) Neural Networks, Support Vector Regression (SVR), Methods of Modelling Dynamical Economic Systems.

Module 4: Applications of ANN and SVM for Economic Modelling (15 Hours)

Modelling and forecasting economic defaults and system failure, stock index modelling, forex modelling and predictive analytics.

References:

1. Tshilidzi Marwala, 2013, Economic Modelling Using Artificial Intelligence Methods, Springer.
2. McNelis, Paul D., 2005, Neural Networks in Finance: Gaining Predictive Edge in the Market by Paul D., Academic Press.
3. Zaki and Meira, 2014, Data Mining and Analysis: Fundamental Concepts and Algorithms, Cambridge University Press.

Economics of Climate Change and Resource Development (ECO 246)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: Climate change is posing several challenges to the sustainability and livelihood across the globe. Uncertainty of climatic change is creating hurdles in the process of sustainable development. Understanding and mitigating climate change have become important aspect of policy making. This 4 credit course aims to equip students with the necessary economic tools to understand the implications of climate change on natural resources and understand issues in renewable energy in response to resource management. This course is built on the course in Environment Economics in semester III.

Course Outcomes for Economics of Climate Change and Resource Development (ECO 246)

CO1: Understand the impact of climate change for sustainable development

CO2: Understand the Global policies and the status of India in global measures of mitigation

CO3: Understanding and mitigating climate change which has become an important aspect of policy making (domestically and internationally)

CO4: Understand the implications of climate change on natural resources.

CO5: Understand issues in renewable energy in response to resource management

Module 1: Understanding Economics of Climate Change (15 Hours)

Defining climate change; Climate change as public good-market failure; Climate change and externalities; Impact of Climate change -adaptation-vulnerability and climate induced migration; Sectoral effects of climate change. (Cost-benefit evaluation)

Module 2: Mitigating Climate change (15 Hours)

Economic approach to valuing damages from climate changes: market based method, and non- market method; Economic efficiency of mitigating programs; financing Climate Change as a common; Measures-policy tools in mitigating climatic change: Cap and trade program, (institutional responsibilities)-Country level (developed and developing) policies for meeting the climate change challenges; International treaties and working together towards a better future- obstacles to reaching a consensus at the global scale, Balancing the policies to benefit both developed and developing economies.

Module 3: Development of Resources and Climate Change (15 Hours)

Conventional resources; Active and passive values of resources; Public policies for resources; Markets and efficiency; Pricing of resources; Technology and resources- transformation of resources in regards to climate change.

Module 4: Use of Resources for Renewable Energy (15 Hours)

Costing of renewable Energies, and its viability (long term v/s short term); Energy consumption; Energy demands. Structure of Energy markets; Pricing of energy: from conventional/nonconventional resources; Cases across developed and developing countries.

References:

Essential Readings

1. Stern Nikolas (2006) Economics of climate change- The Stern Review.
2. Field Barry C. (2012) Natural resource Economics: Introduction, Levant publication Kolkata.
3. Harris and Roach (2014) Environmental and Natural Resource Economics: A Contemporary Approach, Third Edition, Springer.
4. Marina Cazorla and M Toman, (2000), International Equity and Climate Change Policy, Climate Issues Brief No 27, Washington DC: Resources for the Future

Indian Public Finance (ECO 247)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: The course begins with the question of the Role of the State, what it should do, how its functions should be financed and what are its effects on efficiency, growth, stability, and equity. It goes on to deal with the two instruments of government namely Expenditures and Taxes and how the Indian governments over the years have handled these two instruments at their disposal. Finally it looks at the Centre State relations in Indian Federation.

Course Outcomes for Indian Public Finance (ECO 247)

C01: Students will be able to appreciate why governments are important and how government activities are linked to macroeconomic performance of the Economy

C02: Students will be able to understand and analyse budgets of central government

C03: Students will understand the implications of various tax system that prevails in the Indian Economy

C04: Students will understand why and how intergovernmental transfers occur in India and the role of Finance Commissions.

Module 1: Role of the State and Macroeconomics of Public Finance (15 Hours)

Why Government? – Public Finance and Public Choice: Contrasting Views on the State –Reasons for Market Failure and nature of Government Intervention (Public Production, Provision and Regulation); Public Finance in India in the Context of India's Development – Deficits and Debt - Linking Deficits with other Macro Variables- Rule based Fiscal Policy.

Module 2: Public Expenditure in India: Trends and Issues (15 Hours)

Positive and Normative Theories (introduction to voluntary exchange model; Wagner's Law, Peacock Wiseman Displacement Effect) - Budgetary Classification of Expenditures – Economic cum Functional Classification - Public Expenditure trends in India – Public Expenditure Management Framework – FRBM

Module 3: Tax Policy and Reforms in India (15 Hours)

Tax Revenue trends in India - Direct – Indirect tax controversy (Are direct taxes really progressive?) Issues related to Indian Tax System – taxable capacity – GST structure and performance; Property taxation.

Module 4: Indian Fiscal Federalism (15 Hours)

Multi-level fiscal system – Federalism and decentralization; First and Second generation theories; Centralization in Indian Federalism – Emerging environment in Union-State Relations – Intergovernmental Transfers; Sub-state fiscal decentralization in India; urban governance and finance.

References:

1. Bird, Richard M and Eric Zolt (2008), "Tax Policy in Emerging Countries", Environment and Planning: Government and Policy; Vol 26. No. 1
2. M.Govinda Rao (2022): Studies in Indian Public Finance, Oxford University Press, New Delhi
3. M.Govinda Rao and N.Singh (2005): Political Economy of Federalism in India, Oxford University Press, New Delhi.
4. Oates, W. E, (1999) "An Essay on Fiscal Federalism", Journal of Economic Literature, VolXXXVII (September)
5. Oates, W. E (2005) Toward a Second Generation Theory of Fiscal Federalism", *International Tax and Public Finance*. Vol. 12
6. Economic Survey: various issues
7. Finance Commission Reports
8. Budget Documents, GOI

Computational Health Economics (ECO 248)

Number of Credits: 4

Pattern of Evaluation: Standard

Preamble: This course provides a comprehensive introduction to the computational techniques essential for health economics research and policy analysis. It covers a range of methods and applications using real data, from econometric and machine learning models to topics such as measuring health efficiency and inequality, survival analysis, policy simulations, benefit incidence analysis, predictive analysis, and impact evaluations of health interventions.

Course Outcomes for Computational Health Economics (ECO 248)

C01: Students will get exposure to the fundamental conceptual and measurement issues essential to understanding the health sector and health care market in the Indian context

C02: Students will develop both theoretical understanding and practical skills in applying these concepts and measurement techniques to real-life situations and real data.

C03: Students will gain exposure to various econometric and machine learning tools to understand and address issues in the health sector.

C04: Students will also learn to analyse and evaluate health policies and interventions, resource allocation decisions in the health sector and healthcare market dynamics.

Module 1: Revisiting the basics of health economics (15 hours)

Health Sector and Health System; Health Care Market and Market Failure in the Health Sector; Demand and Supply in Health Care; Equity and efficiency in the health sector; Health Financing and Health Insurance; Behavioural Health Economics; Macroeconomic Issues in the Health Sector.

Module 2: Health data and descriptive analysis (15 hours)

Objective and Subjective Health Indicators; Health data sources – national and international; National Health Accounts; Handling of large-scale health data; Open-source software for analysing health data; Descriptive statistics and graphical tools; Ethical considerations in health data usage.

Module 3: Econometric and Machine Learning Methods in Health Economics (15 hours)

Econometric Modelling for Health Policy Analysis; Survival analysis of health variables; Policy Simulations and forecasting; Machine learning applications in health economics; Predictive analysis in health care.

Module 4: Impact Evaluation of Health Interventions (15 hours)

Economic evaluations of health policies; Concepts of endogeneity, self-selection, treatment effect; Propensity Score Matching; Randomised Control Trial; Difference-in-Difference Method; Instrumental Variable Approach; Regression Discontinuity Methods; Cost-Effectiveness, Cost-Utility and Cost-Benefit Analysis; Benefit Incidence Analysis.

References:

1. Angrist, J. D., & Pischke, J. S. (2009): Mostly harmless econometrics: An empiricist's companion. Princeton University Press.
2. Arrow, K. J. (1963): Uncertainty and Welfare Economics of Medical Care. The American Economic Review, 53: 941-973.
3. Cunningham, S. (2021): Causal inference: The mixtape. Yale University Press.
4. Deb, P., Norton, E. C., and Manning, W. G. (2017): Health Econometrics Using Stata, StataPress.
5. Drummond, M. F., Sculpher, M. J., Claxton, K., Stoddart, G. L., and Torrance, G. W. (2015):

Methods for the economic evaluation of health care programmes. Oxford University Press.

6. Folland S, AC Goodman and M Stano (2010): Economics of Health and Health Care (Sixth Edition), Prentice Hall.
7. James, G., Witten, D., Hastie, T., & Tibshirani, R. (2013): An introduction to statistical learning, Springer.
8. Jones, A. (2007): Applied Econometrics for Health Economists (Second Edition), Radcliffe Publishing;
9. Rose, S., Bergquist, S. L., Layton, T. J. (2017): Computational Health Economics for Identification. of Unprofitable Health Care Enrollees, Biostatistics, 18(4), 682–694.
10. Wagstaff, A., O'Donnell, O., Van Doorslaer, E., and Lindelow, M. (2007): Analyzing health equity using household survey data: a guide to techniques and their implementation.
11. World Bank Publications.

Rules for Research Project Component for Semester III and IV

1. Semester III and IV will have the following components: (i) Training workshops (ii) Mid Semester Report, Presentation and Viva Voce (iii) End Semester Report, Presentation and Viva Voce.
2. *Topic:* The topic should be selected in consultation with the mentor. The student can change the topic only till before the mid semester assessment of Semester III. Students will not be permitted to make any substantive change to the topic after the assessment. The same topic will continue in Semester IV. Should any change in topic be required in Semester IV, it would require the student to submit a written application to the office stating the reason for this and consent of the mentor on the application.
3. *Data:* The Research Project should be confined to using Secondary Data.
4. *Marking Scheme:* The components of the Research Project and their distribution of marks are as given below

Semester III	Semester IV
Training Workshops (25 marks) (i) Academic Writing (15 marks) (ii) Referencing and Data Sources (10 marks)	Training Workshops (by NSE - 25 marks) Working with real time data, its interpretation, analysis and economic writing on Markets, Corporate Ownership, Corporate Earnings
Mid Semester Assessment (20 marks) (i) 10 marks for report (ii) 10 marks for the presentation and viva made in review of literature	Mid Semester Assessment (20marks) Report: (i) Statement and Objective of the Research Project (ii) Data Sources (ii) Detailed Description of Methodology
End Semester Assessment (50 marks): (i) Report: 30 marks (ii) Viva Voce: 20 marks (10 marks for presentation and 10 marks for response to questions)	End Semester Assessment: 100 marks (i) Report (75 marks) (ii) Presentation and Response to questions (25 marks)
Contact with Mentor: 5 marks (for interaction/meeting with the mentor – this would be applicable to the entire semester (suggested 1 hour per week))	Contact with Mentor: 5 marks for interaction/meeting with the mentor – this would be applicable to the entire semester (suggested 1 hour per week)
Total Marks: 100 Total Credits: 4	Total Marks: 150 Total Credits: 6

5. *Training Workshops:* The 1 credit for the Training Workshops in semester III and IV will have to be obtained through attending workshops conducted for the same, at the end of which there will be an evaluation. The evaluation may consist of a series of assignments or tests which will be marked out of 25 marks.
6. Attendance at the Workshop and the submission of the associated assignment/test is compulsory. If a student fails to submit the assignment/test of the Academic Workshop, the 25 marks will be deemed as forfeited.
7. *Mid and End Semester Assessment:* The Mid and End Semester assessment would comprise of presentation and a written report. A committee comprising of Department faculty will assess the presentation and report and average marks will be assigned.
8. *Draft Report:* Students are required to show a draft of the report to the mentor one week prior to submission and obtain the signature of the mentor on the final report before submission.

9. *Meetings with Mentor:* Attendance Record of meetings with Mentors carry 5 marks. The student must ensure keep the record with signature of mentor with himself/herself and will be eligible for this only if the attendance record is attached with the written report.
10. *Report:* Before the Mid and End Semester presentation, the student will have to submit a copy of the project report to the office. The report will have to be typed in 1.5 spacing, on one side of the paper and properly bound. A plagiarism report and attendance record will need to be attached with the report.
11. *Failure criterion:* Students who do not get a score of 40% in the aggregate for the Research Project at the end of each semester will be given a grade F and be deemed to have failed in the Project component and will not be eligible for getting any credits. They will then have to re-submit the report and make presentations at additional exam/Semester III/Semester IV as permissible by the Exam committee and the Director.
12. *Absence:* Students who remain absent for the presentation will have to give a written explanation and provide proof of reason for their absence. They would then have to make the presentation at the time of the additional exam.
13. *On time Submission:* Reports will not be accepted beyond the given deadline. Only under exceptional circumstances two days delay will be permitted but the student will need to provide a written explanation and proof of reason for the delay.
14. *Malpractice:* Students will be forewarned about copying and plagiarism (maximum of 10% being permissible). In case of any violations it will be treated as a case of examination malpractice by the student. The student will have to revise and re-submit the report and will be evaluated with the students appearing for additional exam.

GUIDELINES for PRESENTATIONS & REPORTS

Guidelines for Mid-Semester (Semester III) - Primary focus of Semester III is on literature review

Section 1: Introduction (1 slide)

- Purpose of the research project: Outline the objectives and expected outcomes of the project.
- Background Information: Provide context about the project work and its significance.

Section 2: Objectives of the Study (1 slide)

Section 3: Research Papers reviewed (minimum of 5 papers) (4-5 slides)

References:

- Should be listed at the end in alphabetical order.

Guidelines for End Semester (Semester III):

Section 1: Introduction (1 slide)

- Purpose of the research project: Outline the objectives and expected outcomes of the project.
- Background Information: Provide context about the project work and its significance.
- Scope of the Report: Define the boundaries of what the report will cover.

Section 2: Objectives of the Study/Hypothesis (1 slide)

Section 3: Literature Review (15-20 research papers) (5-6 slides)

- Review relevant literature on previous studies on the Research Topic
- Literature Review should be thematically organised

Section 4: Framework of the Research Project to be undertaken in Semester IV including a brief idea on tentative research methodology and Data Sources

Section 5: Conclusion

References

- Should be listed at the end in alphabetical order.

Guidelines for Mid-Semester (Semester IV) – Primary focus is on data, methodology, analysis

Section 1: Introduction (1 slide)

- Purpose of the research project: Outline the objectives and expected outcomes of the project.
- Background Information: Provide context about the project work and its significance.
- Scope of the Report: Define the boundaries of what the report will cover.

Section 2: Literature Review (2 slides)

- Review relevant literature on previous studies on the Research Topic
- The Literature Review should be organized thematically

Section 3: Data and Methodology (4-5 slides)

- Describe the approach and methods used for data collection during the work.
- A detailed description of work to be carried out
- Discuss the rationale behind the chosen methods.

Section 4: Conclusion

References

- Should be listed at the end in alphabetical order.

Guidelines for End-Semester (Semester IV)

Section 1: Introduction (1 slide)

- Purpose of the research project: Outline the objectives and expected outcomes of the project.

- Background Information: Provide context about the project work and its significance.
- Scope of the Report: Define the boundaries of what the report will cover.

Section 2: Literature Review (2 slides)

- Review relevant literature on previous studies on the Research Topic
- The Literature Review should be organized thematically

Section 3: Data and Methodology (1-2 slides)

- Describe the approach and methods used for data collection during the work.
- A detailed description of work to be carried out
- Discuss the rationale behind the chosen methods.

Section 4: Research Work Descriptions, Observations, and Analysis (5 slides)

- Provide detailed descriptions of work carried out.
- Include observations related to the work relevance to the topic selected.
- Analyze the data collected in relation to the study objectives.

Section 5: Conclusion and Recommendations (1-2 slides)

- Discuss how the findings from the work contribute to the understanding of subject area.
- Summarize the key findings and their significance.
- Offer recommendations based on the research findings for further study or preservation efforts.

References

- List all sources cited in the report in alphabetical order

Ph. D COURSE WORK

Research Methodology

Number of Credits: 4

Preamble: This is a one-semester course taught over 48 one-hour sessions. The course is divided into 4 modules of 12 hours each. The method of instruction will be lectures followed by computer applications of the relevant techniques. The lectures will attempt to provide for the rationale behind using a particular model, provide an experience in actual data through computer application of the same and avoid the theoretical or econometric derivations of the models. The objective is to introduce the candidates to the basic quantitative tools commonly used by researchers in Economics.

Prerequisites: Undergraduate Statistics

Module 1: Introduction to Research Methodology (12 Hours)

- Philosophy of research, Types of Research; Research Process-Formulating the Research Problem and Defining the Research Problem; Research Questions; Formulation of Hypothesis; Research Design; data collection, analysis and interpretation of results, writing a research report (various types); Research ethics.

Module 2: Quantitative methods 1: Linear Regression Model and Models for Cross-Section Data (12 Hours)

- Simple and Multiple Linear Regression models: Estimation, Hypothesis testing, Failure of Assumptions. Computer Applications.
- Introduction to Binary Choice Models, Multinomial Choice Models: Ordered Response models, Unordered Response models, Computer Applications

Module 3: Quantitative methods 2: Time Series Models and Panel Data Models (12 Hours)

- Stationary and nonstationary time-series models: ARCH/GARCH models, VAR models, cointegrated VAR models and ARDL models: estimation and forecasting.
- Fixed Effect Model, Random Effect Model, The Hausman test. Regression with dummy variables as explanatory variables, Computer Applications.

Module 4: Further Topics (12 Hours)

- Types of data, Common secondary data sources, Methods of Sampling; Sample Design and survey design, Basic Statistics: Discrete and continuous random variables and their distributions- hypothesis testing (t, F, chi-square and Z distributions), Principal component analysis.

Method of Evaluation

The candidates will be evaluated on the basis of their performance in a written exam for 100 marks, based on the syllabus.

Essential Readings

1. Jeffery Wooldridge: Introductory Econometrics, A Modern Approach, Cengage Learning 2008
2. Cameron and Trivedi: Microeconometrics: Methods and Applications, Cambridge University Press, 2005

Academic Writing

Number of Credits: 2

Preamble: This is a one-semester course, comprising of a taught component (for which attendance is compulsory) and an assignment submission. The objective of this component of the coursework is to acquaint the candidates with the standard protocols of reporting research.

- (1) Academic writing workshop spread over 18 hours (4-6 Saturdays for 3-6 hours each Saturday, attendance is compulsory) (2 Credits)

Domain Specific Course

Number of Credits: 4

Preamble: This is a one-semester course, comprising of a taught component and a seminar presentation. The objective of this component of the coursework is to familiarise the candidates with the fundamentals of the area in which he/she would be working thereby gradually leading up the candidate to the research topic.

1. The domain specific component (which may be related to some advanced technique proposed to be used in the research or greater knowledge in the research area) will be prescribed by the Guide. It can be a 3 or 4 credit online course (conducted by SWAYAM) with certificate of attendance, or a relevant workshop or short term course or any other prescribed course he/she may design for which the candidate will appear for exam on the same platform. If it is a 3 credit course then the student will have to submit a review of literature covering up for the remaining (one) credit, which will be approved by the guide (RAC)

Research and Publication Ethics

Number of Credits: 2

THEORY

Module 1: Philosophy and Ethics (3 Hours)

Introduction to Philosophy: definition, nature and scope, concept, branches

Ethics : definition ,moral philosophy, nature of moral judgments and reactions

Module 2: Scientific Conduct (5 Hours)

Ethics with respect to science and research.

Intellectual honesty and research integrity

Scientific Misconducts : Falsification and Plagiarism (FFP)

Redundant Publications : duplicate and overlapping publications, salami slicing

Selective Reporting and Misrepresentation of data

Module 3 : Publication Ethics (7 Hours)

Publication Ethics: definition, introduction, importance.

Best practices/standards setting initiatives and guidelines: COPE, WAME etc.

Conflicts of interests.

Publication misconduct: definition, concept, problems that lead to unethical behavior and vice versa, types.

Violation of publication ethics, authorship and contribution ship

Identification of Publication misconduct, complaints and appeals

Predatory publishers and journals

Module 4: Open Access Publishing (4 Hours)

Open access publication and initiatives

SHERPA/RoMEO online resource to check publisher copyright & self-archiving policies

Software tool to identify predatory publications developed by SPPU

Journal finder? Journal suggestion tools viz. JANE, Elsevier Journal Finder, Springer Journal Suggester, etc.

Module 5: Publication Misconduct (4 hours)

A. Group Discussions (2 hrs.)

Subject specific ethical issues, FFp, authorship

Conflicts of interest

Complaints and appeals: and fraud from India and abroad

B. Software tools (2 hrs.)

Use of plagiarism software like Turnitin, Urkund and other open source software tools

Module 6: Databases and Research Metrics (7 Hours)

A. Databases (4 hrs.)

Indexing databases

Citation databases: Web of Science, Scopus, etc.

B. Research Metrics (3 hrs.)

Impact Factor of Journal as per Journal Citation Report, SNIP, SJR, IPP, Cite Score

Metrics: h-index, g index, i 10index, altmetrics.

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). *On Being a Scientist: A Guide to Responsible Conduct in Research: Third Edition*. National Academies Press.
5. Resnik, D. B. (2011). What is Ethics in Research & why it is important. National Institute of Environmental Health Sciences, 1-10. Retrieved from <https://www.niehs.nih.gov/research/resources/bioethics/whatis/index.cfm>
6. Beall, J. (2012), Predatory publishers are corrupting open access. *Nature*, 489(7415), 179-179.
7. <https://doi.org/10.1038/489179a>
8. Indian National Science Academy (INSA), *Ethics in Science Education, Research and Governance*(2019).
9. ISBN:978-81-939482-1-7.
10. https://www.insaindia.res.in/pdf/Ethics_Book.pdf

Successful students will be issued a certificate after clearing the course work.

All the rules of coursework such as duration, assessment, exemption, minimum standard for completion of the coursework would follow the VCD/947 of 2018, of University of Mumbai.
