XIM UNIVERSITY

SCHOOL OF ECONOMICS

M.Sc. in Economics

(Effective from Academic Year 2021-22)

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1 The M.Sc. Program and Program Objective

The M.Sc. program offered by the School of Economics is designed to provide cutting-edge knowledge and scope to students to learn advanced technical skills in Economics. These skills which students will acquire will enable them to be competitors in the corporate world as well as in academia at par with the best nationally and globally acclaimed institutions. Graduates here obtain skill sets that allow them to explore and apply the competency in the industry and academia. The School of Economics extends that access to outside that region, combining these with the world-class infrastructure and facilities scarcely available elsewhere in India. The Faculty to nurture those skills are among the best anywhere in the country.

2 Admission Procedure

Eligibility criteria is a minimum of 55% (or equivalent) aggregate marks at the undergraduate level from -in ANY discipline and, for candidates from non-economics disciplines (at the undergraduate level), who have secured a minimum of 60% (or equivalent) aggregate marks in mathematics at the 10+2 level are eligible to apply for the program. Other candidates may apply with the Dean's prior approval.

3 Curriculum Design

The school follows a course structure based on the UGC guidelines and benchmarked at the highest premier institutions in India and globally. The course is spread over two years, comprising of four Semesters. Students have to complete 16 courses, out of which 9 are compulsory. In the first year, students have no choice and are expected to complete 8 out of the 9 compulsory courses. At the beginning of the second year, students have to choose between the following two routes:

a. Dissertation route: Write a dissertation and complete 5 optional courses. The dissertation is equivalent to two courses.

b. Non-Dissertation route: Complete 7 optional courses.

Students have to choose optional courses from a list of optional courses offered by the school at the beginning of the third and fourth semesters. The choice of the route is subject to approval by the Dean.

4 Course Structure

Year I			
Sl. No.	**Semester I**	**Sl. No.**	**Semester II**
1	Microeconomics I	1	Microeconomics II
2	Macroeconomics I	2	Macroeconomics II
3	Mathematical Methods in Economics	3	Econometrics
4	Statistical Methods	4	Indian Economy
Year II			
Sl. No.	**Semester III**	**Sl. No.**	**Semester IV**
1	Development Economics	1	Optional Course IV
2	Optional Course I	2	Optional Course V
3	Optional Course II	3	Optional Course VI
4	Optional Course III or Dissertation	4	Optional Course VII or Dissertation

** Each course is of 6 credits.*

5 List of Core Courses

Sl. No	Core Course
1	Microeconomics I
2	Macroeconomics I
3	Mathematical Methods in Economics
4	Statistical Methods
5	Microeconomics II
6	Macroeconomics II
7	Econometrics
8	Indian Economy
9	Development Economics

6 Optional Courses and Tentative List of optional courses

6.1 Selection of Optional Courses

1. A student can replace any one optional course by dissertation in Semester III and Semester IV. E.g. Some one may choose Optional Course I and III in the Semester III and dissertation instead of choosing Optional course II.

2. The selection of "Optional Courses" shall meet a basic consistency criterion. Specifically, an advanced optional topic will not be offered unless the basic optional topic is accommodated in the choice.

3. Allocation of "Optional Courses" for each of the students will be finalized with Dean's approval.

4. The choice of "Optional Courses" in the semester will be limited to those announced by the school, and there might be a restriction/cap on the number of students choosing an "Optional Course."

6.2 Tentative List of Optional Courses

Sl.	Optional Course	Sl.	Optional Course
1	Measurement and Policy formulations of Poverty, Inequality and Polarization	16	Growth and Distribution
2	Behavioral Economics and Experiments using zTree	17	Public Economics
3	Time Series Econometrics	18	International Economics
4	Applied Microeconomics	19	Money, Banking and Finance
5	Topics in Macroeconomics.	20	Behavioral Economics from a Development Perspective
6	Economics of Education and Health.	21	Law and Economics
7	Issues in Development Economics.	22	Political Economy.
8	Environmental Economics and Sustainable Development	23	Financial Econometrics
9	Econometric Methods and Application	24	Monetary Macroeconomics: Theory and Policy
10	Data Analytics	25	Human Development
11	Theory of Contract and Incentives	26	Media Economics
12	Social Choice Theory	27	Gender Economics
13	Corporate Finance	28	Labor Economics
14	Econometrics of Financial Markets	29	Financial Risk Management in Banks and Financial Institutions
15	Agricultural Economics	30	Financial markets & Institutions

** Each course is of 6 credits.*

7 Core Courses

7.1 MECC01: Microeconomics I

Course Introduction and Objectives

This course is designed to provide a training in microeconomic theory in a way that allow students to apply the tools and methods discussed in class on their own rather than just passively absorb some definitions and formulas. The entire course strongly emphasizes on some concrete real-life/hypothetical examples. This is done mainly to understand the practical applications and/or for a better clarification of the microeconomic theories. The approach of the course is analytical. A strong attention is diverted to enhance the art of problem solving.

Course Outcomes

Students will be able to illustrate with simple models how consumer chooses the best bundle that is affordable to her choice set. Students will be able to solve quantitative problems in microeconomics related to this course using simple algebra or graphs. Students will be able to illustrate the constraints of a firm and how a firm can maximise profit or minimize costs.

Course Content

1. **Consumer Behaviour:** Consumption set, budget set, demand functions, WARP and Law of demand, comparative statics
2. **Demand theory:** Preference and utility, Utility maximization, Expenditure minimization, Duality-Demand, indirect utility, expenditure functions, Welfare and Consumer surplus, Equivalent and compensating variation
3. **Aggregate Demand:** Aggregate demand and aggregate wealth-weak axiom- existence of a representative consumer
4. **Production:** Technology, Profit maximization and cost minimization, profit function and cost function, Envelope theorem, duality
5. **Game theory:** A primer: Simultaneous game: Pure strategy and mixed strategy, Sequential game: Backward induction
6. **Perfect competition:** Market equilibrium – Pareto efficiency – taxes and subsidies.
7. **Imperfect Competition:** Monopoly-Price discrimination- durable goods monopoly, Oligopoly- Cournot-Bertrand-Stackelberg-Application of game theory
8. **General Equilibrium Analysis:** Exchange economy- Walrasian equilibrium-welfare theorems-existence of equilibrium, Production economy-existence of equilibrium, properties, Equilibrium: Core, shrinking core, core convergence, uniqueness

9. **Welfare:** Welfare Criteria - Fairness; Pareto optimality; Kaldor-Scitovsky-Samuelson Criterion; Cost Benefit Analysis, Social Choice; Utility possibility sets, Social Welfare Function; Arrow's Impossibility Theorem, Social optima

10. Market failure: Public goods and externalities.

Reading and References

- Textbook

  1. Microeconomic Theory by Mas-Colell, Whinston, Green
  2. Microeconomic Analysis by Hal R. Varian

- Reference Books

  1. Microeconomics by Gravelle and Rees
  2. Introduction to Game Theory by Martin J. Osborne

7.2 MECC02: Macroeconomics I

Course Introduction and Objectives

This course familiarizes students with contemporary topics in macroeconomic theory. It develops a brief but formal discussion on the theory and relationship among various macroeconomic aggregates. The course also focuses on the interactions between output, employment and prices under different schools of macroeconomic thought. It also lays special emphasis on the aspect of fluctuations in macroeconomic aggregates and the role of stabilisation policies in addressing such fluctuations.

Course Outcomes

Students will be able to understand the reasons that contribute to fluctuations in macroeconomic aggregates. Students will be able to critically evaluate the effectiveness of government policies in stabilising the economy. Students will be able to solve quantitative problems in macroeconomics related to this course using simple algebra or graphs.

Course Content

1. Building Blocks, Labour market; aggregate demand; aggregate supply; review of the IS-LM model; adaptive expectations; different schools of thought.

2. Dynamics of Aggregate Demand and Supply The adaptive expectations and stability analysis; investment, capital stock and stability; wealth effects and the government budget constraints.

3. New Classical Macroeconomics Rational expectations; policy ineffectiveness proposition; wage contracts; imperfect information; Lucas supply curve; Lucas critique.

4. New Keynesian Macroeconomics Nominal rigidities; need for real rigidities; coordination failures.

5. Unemployment Efficiency wage; contracting model; matching model.

6. Inflation and Monetary Policy Dynamic inconsistency; seigniorage and inflation tax; voting approach to optimal inflation.

7. Budget Deficits and Fiscal Policy The government budget constraint; Ricardian equivalence; tax smoothing; sovereign debt crises.

Reading and References

- Textbook:

    1. Advanced Macroeconomics by David Romer, Fifth Edition, McGraw Hill Publishers, 2019 - henceforth DR
    2. The Foundation of Modern Macroeconomics by Ben J. Heijdra, Second edition, Oxford University Press, 2009 - henceforth BH

- Reference Books

1. Macroeconomic Theory by M. Wickens, Second edition, Princeton University Press, 2011.
2. Macroeconomics - Imperfections, Institutions & Policies, OUP by Wendy Carlin and David Soskie, 2006.

7.3 MECC03: Mathematical Methods in Economics

Course Introduction and Objectives

This course is one of the core courses for the students of economics at the postgraduate level. Students need to know some mathematical concepts that will help them to analyze the economic situations analytically. The objective is to rigorously introduce and teach several areas of mathematics that are widely used in Microeconomics, Macroeconomics and Econometrics. The approach of the course will be analytical so that we expect as a learning outcome that students can go beyond cookbook procedures when modeling and analyzing economic problems.

Course Outcomes

Students will get to know the basics of algebra and also higher algebra. They will also know how to solve different types of equations and apply in economic theories. Students will be able to apply the concept of calculus in various economic models. Students will get the knowledge of point-set topology and different fixed point theorems. These are applied mainly applied in different game-theoretic situations. Students will learn about dynamic optimization, dynamic programming, and its applications in economic theory-How overtime systems converge to an equilibrium and how w.r.t. an economic system works.

Course Content

1. Sets, relations, functions, mapping, composite, inverse, functions and mapping.
2. Theory of Equations
3. Linear Models, matrix algebra and vector analysis. Vector spaces, subspaces. Convex sets, concave and quasi-concave functions, their characterizations. Linear independence. Linear mappings and matrix representation. Solutions of linear equations. Inner product and normed spaces. Orthogonality. Symmetric matrices. Quadratic forms. Spectrum of matrix.
4. Sequences and convergence. Limit points. Continuity. Differentiability Partial derivatives; change in the order of differentiation. Differential and its geometric meaning. Mean-Value Theorem and Taylor's Theorem (revisited). Applications in Economics.
5. **Basic Real Analysis:** In normed spaces, notions of open, closed and compact sets, continuous functions, their optima and their existence. Notions of differentiability of mappings between Euclidean spaces, chain rule, higher order derivatives.
6. Implicit and inverse function theorem, comparative statics.
7. **Elements of point-set topology and functional analysis:** Metric Spaces, Continuity, Convergence, Weirstrass Theorem, Fixed-Point theorem (Brouwer FPT, Kakutani's FPT, etc.).

8. **Static Optimization:** Review of Classical Constrained Programming and Nonlinear Programming, Comparative Statics, Envelope Theorem , Saddle Point Theorem, Concave and Convex Programming. Lagrange characterization of optima subject to equality constraints. Karush-John-Kuhn-Tucker characterization of optima subject to inequality constraints.

9. **Dynamic Optimization:** The Calculus of Variations, Optimal Control Theory and Hamiltonian, Dynamic Programming.

10. **Differential Equations and Stability Issues:** Eigenvalues, Differential Equations, Stability Theory, Phase Diagrams.

11. Application in Economic Theories.

Reading and References

- Textbook(s):

    1. Mathematics for Economists by Carl P. Simon and Lawrence Blume
    2. Elements of Dynamic Optimization by Alpha C. Chiang
    3. Principles of Mathematical Analysis by Walter Rudin.
    4. Higher Algebra by S.K. Mapa.

- Reference Book(s):

    1. Mathematical Optimization and Economic Theory by Michael D. Intriligator
    2. Mathematical Analysis by Eguene Silberberg and Wing Suen.
    3. Real Analysis by S.K. Mapa
    4. Elementary Fixed Point Theorems by P.V. Subhramanyam

7.4 MECC04: Statistical Methods

Course Introduction and Objectives

The first half of the course covers basic concepts in probability and mathematical statistics that are needed for the study of econometrics. The second half introduces basic econometric techniques commonly used in the empirical analysis of economic relationships and other social sciences. Students would acquire theoretical knowledge of statistics and basic econometric techniques used in the empirical analysis of economic relationships. They will undergo hands-on training in the use of software to select random samples, compute numerical counterparts of theoretical results and estimate empirical models.

Course Outcomes

On successful completion of this course, students will be able to appreciate the role of probability theory in econometric analysis. Students will be able to apply the concepts of linear regression, multiple linear regression, dummy variables in regression models, etc. for data analysis.

Course Content

1. **Probability, Random Variables, Distributions:** Sample spaces, Counting methods, Conditional Probability, Bayes' Theorem. Discrete, continuous and mixed random variables, marginal and conditional distributions, multivariate distributions, distributions of functions of random variables. Expectations, conditional expectations and other moments.

2. **Estimation:** Properties of estimators, sufficient statistics, maximum likelihood estimation.

3. **Sampling Distributions, Asymptotic Distribution Theory:** Large Sample Results: Laws of large numbers and central limit theorems. Sampling Distributions of Estimators: The Chi-square, t and F distributions.

4. **Hypothesis Testing:** Definition of a statistical test. Size, significance and power. Likelihood ratio tests and the Neyman Pearson Lemma. Uniformly most powerful tests, t and F tests for moments of a distribution.

5. **Linear Regression:** Simple Linear Regression - Ordinary Least Squares (OLS) Estimation; Desirable properties of least squares estimators; Goodness-of-Fit; Normality assumption for the errors; Maximum likelihood estimation.

6. **Multiple Linear Regression:** Ordinary Least Squares (OLS) Estimation; Underlying assumptions; Goodness-of-Fit.

7. **Dummy variables in regression models:** Qualitative regressors; qualitative and quantitative regressors; interaction terms.

8. **Multicollinearity, Heteroscedasticity, Autocorrelation:** Nature; implications; detection; remedies

9. **Simultaneous Equation System :** Limited Information Estimation: Endogeneity problem, Instrumental Variable, Omitted Variable (Indirect Least Square, 2-Stage Least Square) Problem of Identification: Structural Form and Reduced Form, Observational Equivalence, Rank and Order Condition.

Reading and References

1. Maddala, G S and Kajal Lahiri (2009), Introduction to Econometrics, John Wiley Sons, England, 4th Edition.

2. Wooldridge, Jeffrey M (2009), Introductory Econometrics: A Modern Approach, South-Western Cengage Learning, USA, 4th Edition.

3. Johnston, Jack and John Dinardo (1997), Econometric Methods, McGraw Hill, New York, 4th Edition.

4. Gujarati, Damodar N and Dawn C Porter (2009), Basic Econometrics, McGraw Hill, New York, 5th Edition.

7.5 MECC05: Microeconomics II

Course Introduction and Objectives

This course is designed to provide training in microeconomic theory in a way that allows students to apply the tools and methods discussed in class on their own rather than just passively absorb some definitions and formulas. The entire course strongly emphasizes some concrete, real-life/hypothetical examples. This is done mainly to understand the practical applications and/or clarify the microeconomic theories. The approach of the course is analytical. Strong attention is diverted to enhance the art of problem-solving.

Course Outcomes

Students will be able to illustrate with simple and advanced models of game theory. Students will be able to solve quantitative problems in microeconomics related to this course using simple, higher algebra, calculus, or graphs. Students will be able to understand how individuals make decisions under uncertain situations. Students will learn how individuals behave in an auction and how auction prices are set. Students will understand how and why information plays a crucial role in economics and how these are related to the real world.

Course Content

1. **Static Games of Complete Information:** Concept of a game- normal form representation-Nash equilibrium. Existence of Nash equilibrium. Solving games.
2. **Dynamic Games of Complete Information:** Dynamic games-Sub games- backward induction-subgame perfection – Entry deterrence game.
3. **Repeated Games:** Theory: two-stage repeated games and theory: finitely repeated games: Prisoners' Dilemma Game. Infinitely repeated games- Folk theorem
4. **Static games of incomplete information:** Bayesian Nash equilibrium, Application: Cournot under Asymmetric information, Battle of Sexes, Firm Entry and Prisoners' Dilemma.
5. **Other games:** Trust game, Ultimatum game, Dictator game, etc,.
6. **Stochastic Dominance:** First order and Second order.
7. **Decision-making under risk and uncertainty**: preference over lotteries, choice under uncertainty -The vNM axioms and EUT, risk aversion, portfolio choice.
8. **Auctions:** Four standard auctions, Independent private value models, Bidding in First-price sealed bid, Dutch, Second-price sealed bid and English auctions, Revenue comparisons.
9. Information Economics- Principal-agent problem – hidden action – hidden type-Screening – Signaling -Cheap Talk- Spence's Labor market model.

Reading and References

- Textbook(s)

  1. Mas-Collel A., Whinston M. D. and Green J. R. (2012) - Microeconomic Theory, Oxford University Press, India.

- Reference(s)

  1. Gibbons, R. - Game Theory for Applied Economists, Pearson Higher Education & Professional Group, 2010
  2. Jehle G. A. and Reny P. J. (2006) – Advanced Microeconomic Theory, 2nd Edition, Pearson Education, India.
  3. Microeconomic Analysis by Hal R. Varian

7.6 MECC06: Macroeconomics II

Course Introduction and Objectives

This course familiarises students with contemporary developments in the theory of economic growth, their possible extensions and applications. It broadly covers growth models with exogenous savings, models with endogenous savings or with consumer optimization, and models of endogenous growth that includes knowledge spillovers, public goods, and human capital. The course also contains the applications of overlapping-generations models to social security and altruism. Finally, the course contains the theory of short run economic fluctuations, with a focus on real business cycle model for explaining the cyclical behavior of employment and output.

Course Outcomes

Students will be able to understand the reasons behind why some countries are so rich and others are so poor. Students will be able to critically evaluate the effectiveness of various government policies in promoting economic growth. Students will be able to solve quantitative problems in macroeconomics related to this course using simple mathematics or graphs.

Course Content

1. Introduction to economic growth Importance of economic growth, world income distribution, empirical regularities about economic growth, history of modern growth theory.

2. Growth models with exogenous saving rates

    - The Solow-Swan model Basic structure of the model, steady state, golden rule of capital accumulation and dynamic inefficiency, transitional dynamics, comparative statics, absolute and conditional convergence, extensions to technological progress and physical and human capital, growth models with poverty traps
    - The A-K model Theoretical dissatisfaction with neo-Classical theory, basic structure of the A-K model with exogenous savings, endogenous growth and transitional dynamics

3. Growth models with endogenous savings

    - Dynamic optimization in continuous time: optimal control theory in the context of growth models
    - The Ramsey-Cass-Koopman's model of consumer optimization Basic structure of the model for the decentralized market economy, transitional dynamics, balanced growth path and golden rule capital stock, comparative statics, comparison with social planner's solution, extension to include government purchases and open economy context.
    - The Diamond's overlapping generations model Basic structure of the model, dynamics of the decentralized economy, balanced growth path, possibility of

dynamic inefficiency of the market economy, government in Diamond's OLG model.

4. Models of endogenous growth
   - A brief idea of endogenous growth model
   - The A-K model (with endogenous savings) Model set up, steady-state, transitional dynamics.
   - Models with learning by doing and knowledge spillovers Motivating the role of learning-by-investing and knowledge spillovers; characterizing the balanced growth path and the transitional dynamics; Pareto non-optimality and policy implications.
   - Model of public good/ infrastructure and endogenous growth.
   - Models with human-capital (one-sector and two-sector models) Basic one-sector model with physical and human Capital, models with two sectors of production, the Uzawa-Lucas model, steady state analysis, transitional dynamics.
5. Altruism, Social Security and Capital Accumulation (3 hours) Application of Diamond's market economy model to incorporate altruism; application to social security and implications for capital accumulation.
6. Real Business Cycle dynamics Some facts about economic fluctuations, an overview of business-cycle research, a baseline RBC model, a special case of the model, general case, implications.

Reading and References:

1. Barro, Robert J and Sala-i-Martin, Xavier (BS). Economic Growth. Second Edition. Prentice Hall, India. 2004. Chapters- Introduction, 1, 2, 3, 4, 5, Appendix A.3.
2. Blanchard, Olivier Jean and Fischer, Stanley (Bamp;F). Lectures on Macroeconomics. 1996. Prentice Hall of India. Chapters. 2, 3 amp; 4.
3. Chiang, Alpha C (AC). Elements of Dynamic Optimization. 1992. Waveland Press Inc. USA. Chapter- Part III, Ch7.
4. Romer, David (DR). Advanced Macroeconomics. Second Edition. McGraw-Hill International Edition (Economics Series). 2001. Chapters 1, 2, 3 amp; 5.
5. Wickens, Michael (MW). Macroeconomic Theory: A Dynamic General Equilibrium Approach. 2008. Princeton University Press. Princeton and Oxford. Chapters 2, 3, amp; 6.
6. M. Hoy, J. Livernois, C. McKenna, R. Rees amp; T. Stengos (HLMRS). 2014. Mathematics for Economics, Third Edition, PHI Learning Private Limited. Chapter 25.
7. Romer, P. M. (1994). "The origins of endogenous growth", Journal of Economic Perspectives, Vol. 8, No. 1, pp. 3-22.

7.7 MECC07: Econometrics

Course Introduction and Objectives

Econometrics is about how we can use theory and data from economics, business and the social sciences, along with tools from statistics, to answer "how much" type questions." (Hill, Griffiths, and Judge, Introduction to Econometrics, 2nd edition, John Wiley Sons, Inc., 2001). The aim of this course is to provide a foundation in applied econometric analysis and develop skills required for empirical research in economics. Three core areas of econometrics namely cross sectional econometrics, Time series, and Panel data are part of this course. However, the ajor ephasis is on time series and panel data econometrics. Advanced topics related to limited dependent variables is given special importance. Furthermore, topics related to impact evaluation that has got special attention recently also is discussed in details.

Course Outcomes

Students will be able to analyze economic data and formulate policies. They will be able to interpret basic empirical papers in economics. Students will be able to analyze performance of government at a basic level.

Course Content

1. Introductory Time Series Models: Difference Equation, Stationary Time Series Models, Models With Trend
2. Linear Panel Data Models: Fixed and Random Effects Models, Dynamic Panel data models
3. Limited Dependent Variables: Logistic Regression, Probit Regression, Bivariate Probit Models, Ordered Logit and Probit Models, Censored Regression-Tobit and Hurdle Models, Count Data Models: Poisson Regression, Negative Binomial Models, Zero Inflated Models
4. Estimating Average Treatment Effects: Difference in Difference Methods, Regression Discontinuity Design, Propensity Score Matching, Natural Experiments, Randomized Control Trials

Reading and References

1. Greene, William H. Econometric analysis. Pearson Education India, 2003.
2. Wooldridge, Jeffrey M. Econometric analysis of cross section and panel data. MIT press, 2010.
3. Enders, Walter. Applied econometric time series. John Wiley Sons, 2008.

7.8 MECC08: Indian Economy

Course Introduction and Objectives

This course offers an analytical introduction to some of the major aspects of the economic development and policy in post-independent India. This course will help students to understand the application of economic theory, and the statistical and econometric techniques that they are introduced in other courses.

Course Outcomes

Students will know the evolution of (Indian) economy, its institutional framework, and the major debates on comparative and contemporary economic issues. Students will learn the tools to understand and analyze the policy making in an informed way. Students will get familiar with how to conduct independent research in these areas.

Course Content

1. Indian economic growth, distribution and structural change: A comparative historical perspective
2. Poverty, inequality, and regional divergence
3. Food and nutrition
4. Agriculture
5. Economic reforms and industrial performance
6. Public finance and fiscal reforms
7. Affirmative action
8. Footprints of colonial history in post-independent India

Reading and References

- Indian economic growth, distribution and structural change: A comparative historical perspective
    1. Ashok Kotwal, Bharat Ramaswami, and Wilima Wadhwa (2011). Economic Liberalization and Indian Economic Growth: What's the Evidence?. Journal of Economic Literature 49 (4): 1152-1199.
    2. Chetan Ghate and Stephen Wright (2012). The 'V-Factor': Distribution, Timing and Correlates of the Great Indian Growth Turnaround. Journal of Development Economics 99: 58-67.
    3. Dani Rodrik and Arvind Subramanian (2005). From "Hindu Growth" to Productivity Surge: The Mystery of the Indian Growth Transition. IMF Staff Papers 52 (2): 193-228.
- Poverty, inequality, and regional divergence

1. Angus Deaton and Valerie Kozel (2005). Data and Dogma: The Great Indian Poverty Debate. World Bank Research Observer 20 (2): 177-199.
2. Gaurav Datt, Martin Ravallion, Rinku Murgai (2020). Poverty and Growth in India over Six Decades. American Journal of Agricultural Economics 102 (1): 4-27. (With Appendix).
3. Lucas Chancel and Thomas Piketty (2019). Indian Income Inequality, 1922-2015: From British Raj to Billionaire Raj?. Review of Income and Wealth 65: 33-62. (With Erratum).
4. Prerna Sanga and Abdul Shaban (2017). Regional Divergence and Inequalities in India. Economic and Political Weekly.
5. Samarjit Das, Chetan Ghate, and Peter Robertson (2015). Remoteness, urbanization and India's unbalanced growth, World Development 66: 572-587.

- Food and Nutrition

1. Jean Dreze and Reetika Khera (2017). Recent Social Security Initiatives in India. World Development 98: 555-572. (An informative read on major social security schemes in India)
2. Angus Deaton and Jean Dreze (2009). Food and Nutrition in India: Facts and Interpretations. Economic and Political Weekly.
3. Lisa Smith (2013). The Great Indian Calorie Debate: Explaining Rising
4. Undernourishment during India's Rapid Economic Growth. IDS Working Paper 430. (Background paper)
5. Neeraj Kaushal and Felix Muchomba (2015). How consumer price subsidies affect nutrition. World Development 74: 25-42.
6. Prasad Krishnamurthy, Vikram Pathania, and Sharad Tandon (2017). Food price subsidies and nutrition: evidence from state reforms to India's public distribution system. Economic Development and Cultural Change 66 (1): 55-90.
7. Suman Chakrabarti, Avinash Kishore, and Devesh Roy (2018). Effectiveness of Food Subsidies in Raising Healthy Food Consumption: Public Distribution of Pulses in India. American Journal of Agricultural Economics 100 (5): 1427-1449.

- Agriculture

1. Andrew Foster and Mark Rosenzweig (2004). Agricultural Productivity Growth, Rural Economic Diversity, and Economic Reforms: India, 1970–2000. Economic Development and Cultural Change 52 (3): 509-542.
2. Prashant Bharadwaja, James Fenske, Namrata Kala, and Rinchan Ali Mirza (2020). The Green revolution and infant mortality in India. Journal of Health Economics 71 (102314).
3. Pratap Birthal, Digvijay Negi, Md. Tajuddin Khan, and Shaily Agarwal (2015). Is Indian agriculture becoming resilient to droughts? Evidence from rice production systems. Food Policy 56: 1-12.

4. Reena Badiani-Magnusson and Katrina Jessoe (2019). Electricity Prices, Groundwater, and Agriculture: The Environmental and Agricultural Impacts of Electricity Subsidies in India. Chapter in Agricultural Productivity and Producer Behavior, Wolfram Schlenker (Ed.), University of Chicago Press.

- Economic reforms and industrial performance

1. Anneleen Vandeplas, Bart Minten, and Johan Swinnen (2013). Multinationals vs. Cooperatives: The Income and Efficiency Effects of Supply Chain Governance in India. Journal of Agricultural Economics 64 (1): 217-244.
2. Laura Alfaro and Anusha Chari (2014). Deregulation, Misallocation, and Size: Evidence from India. Journal of Law and Economics 57: 897-936.
3. Leslie Martin, Shanthi Nataraj, and Ann Harrison (2017). In with the Big, Out with the Small: Removing Small-Scale Reservations in India. American Economic Review 107 (2): 354-386.
4. Megha Mukim (2015). Coagglomeration of formal and informal industry: Evidence from India. Journal of Economic Geography 15 (2): 329-351.
5. Philippe Aghion, Robin Burgess, Stephen J. Redding and Fabrizio Zilibotti (2008). The Unequal Effects of Liberalization: Evidence from Dismantling the License Raj in India. American Economic Review 98 (4): 1397-1412.
6. Ritam Chaurey (2015). Labor regulations and contract labor use: Evidence from Indian firms. Journal of Development Economics 114: 224-232.
7. Somik Lall, Zmarak Shalizi, and Uwe Deichmann (2004). Agglomeration economies and productivity in Indian industry. Journal of Development Economics 73: 643-673.

- Public finance and fiscal reforms

1. Amaresh Bagchi (2003). Rethinking Federalism: Changing Power Relations between the Center and the States. Publius: The Journal of Federalism 33 (4): 21-42.
2. M. Govinda Rao and Nirvikar Singh (2006).The Political Economy of India's Fiscal Federal System and its Reform. Publius: The Journal of Federalism 37 (1): 26-44.
3. M. Govinda Rao (2015). Political Economy of Government Finance in India. India Review 14 (1): 58-72.
4. M. Govinda Rao and R. Kavita Rao (2006). Trends and Issues in Tax Policy and Reform in India. India Policy Forum 55-122.
5. Stanley Winer, J. Stephen Ferris, Bharatee Bhusana Dash, and Pinaki Chakraborty (2020). Political competitiveness and the private–public structure of public expenditure: a model and empirics for the Indian States. International Tax and Public Finance. (With Public Finance Premier in the Appendix).

- Affirmative action

1. Aimee Chin and Nishith Prakash (2011). The redistributive effects of political reservation for minorities: evidence from India. Journal of Development Economics 96 (2): 265-277.

2. Ashwini Deshpande and Thomas Weisskopf (2014). Does Affirmative Action Reduce Productivity? A Case Study of the Indian Railways. World Development 64: 169-180.
3. Francesca Jensenius (2015). Development from representation? A study of quotas for the Scheduled Castes in India. American Economic Journal: Applied Economics 2 (3): 196-220.
4. Nishith Prakash (2020). The impact of employment quotas on the economic lives of disadvantaged minorities in India. Journal of Economic Behavior and Organization 180: 494-509.
5. Rohini Pande (2003). Can mandated political representation increase policy influence for disadvantaged minorities? Theory and evidence from India. American Economic Review 93 (4): 1132-1151.

- Footprints of colonial history in post-independent India

1. Abhijit Banerjee and Lakshmi Iyer (2005). History, Institutions, and Economic Performance: The Legacy of Colonial Land Tenure Systems in India. American Economic Review 95 (4) 1190-1213.
2. Abhijit Banerjee, Lakshmi Iyer and Rohini Somanathan (2005). History, Social Divisions, and Public Goods in Rural India. Journal of the European Economic Association 3 (2/3): 639-647.
3. Amparo Castello-Climent, Latika Chaudhary, and Abhiroop Mukhopadhyay (2017). Higher education and prosperity: From Catholic missionaries to luminosity in India. Economic Journal 128: 3039-3075.
4. Lakshmi Iyer (2010). Direct Versus Indirect Colonial Rule in India: Long-Term Consequences. Review of Economics and Statistics 92 (4): 693-713.
5. Latika Chaudhary and Manuj Garg (2015). Does history matter? Colonial education investments in India. Economic History Review 68 (3): 937-961.
6. Rossella Calvi and Federico Mantovanelli (2018). Long-term effects of access to health care: Medical missions in colonial India. Journal of Development Economics 135 285-303.

7.9 MECC09: Development Economics

Course Introduction and Objectives

This course begins with an introduction to some basic theories of development economics like rural-urban migration, institutions and development, and inequality-growth relationships.Then some advanced topics on the measureent of poverty, inequality, human development index and polarization are discussed. Then theoretical foundations of economic inequality measures are discussed. Income is a measure of output. Thus income inequality may rise because of differences of ability, skills or effort. The next topic that is discussed is "Inequality of Opportunity"(IOP). Parallel to these issues some core issues that carries importance to development economists for decades like credit market imperfections, trade and development are also discussed in details.

Course Outcomes

Students will be able to illustrate how to measure poverty, inequality and other related issues. They will also be alble to analyze government policies on poverty reduction. They will be able to explain the basics of credit market imperfections. They will also be able to illustrate the relationship between international trade and economic development.

Course Content

1. Introduction to Development Economics, Rural-Urban Migration : Harris-Todaro Model
2. **Institutions and Development:** Role of Institutions in Economic Development, Provision of Public Goods: Healthcare, Education, Infrastructure, Social Security and Inclusion-Employment generation, Credit expansion, Impact evaluation
3. **Inter-linkages in rural market and Credit market imperfection:** Potential risks, Market equilibrium, Moral Hazard, Lenders' Risk Hypothesis
4. **Trade and Development:** Political Economy approaches to trade agreements, GATT, WTO: IPR, Agricultural sector.
5. **Measurement of Poverty and Inequality:** Inequality of What? Why should we care about inequality? Inequality and Crime, Axioms of income inequality measures, Inequality, Social Welfare Functions and Inequality Indices, Lorenz Curve, Lorenz Dominance, Gini Coefficient, and Lorenz Consistent Inequality Measures, Inequality of Opportunity and Economic Growth. Concepts of Poverty, Poverty Lines, Axioms of Poverty Measures, Poverty and Stochastic Dominance, FGT and other Poverty measures Measures , Multidimensional Poverty, Poverty and Famines (Entitlement Approach), Private Lives of the Poor, Poverty and Institutions
6. **Human Development Index:** Old versus New HDI, Inequality Adjusted HDI
7. **Polarization and Conflict:** The Concept of Polarization. Bi- Polarization, Income Polarization, Social Polarization, Conflicts.

Reading and References

- Textbook:

  1. Bagwell and Staiger, economics of world trading system
  2. Basu Kaushik (1997): "Analytical Development Economics: The Less Developed Economy Revisited"
  3. Todaro
  4. Debraj Ray (1999): 'Development Economics'. OUP

- Reference Books

  1. Rodrik, D. (1995a): "Trade and Industrial Policy Reform," in J.R. Behrman and T.N. Srinivasan (eds.), Handbook of Development Economics, vol. III,B Amsterdam, North-Holland,1995.
  2. Rodrik D. (1995b): "The Political Economy of Trade Policy," in G. Grossman and K. Rogoff(eds.),
  3. Handbook of International Economics, vol. 3, Amsterdam, North-Holland, 1995.
  4. Sen, Amartya. Poverty and famines: an essay on entitlement and deprivation. Oxford university press, 1982.
  5. Sen, Amartya, et al. On economic inequality. Oxford university press, 1997.
  6. Chakravarty, S. (2009). Inequality Polarization and Poverty. Advances in Distributional Analysis. Springer Verlag, New York.
  7. Chakravarty, Satya R. "Inequality, Polarization and Conflict." Economic Studies in Inequality, Social Exclusion and Well-Being 12 (2015).
  8. Banerjee, Abhijit and Esther Duflo, Poor Economics: A Radical Rethinking of the way to Fight Global Poverty, Public Affairs, 2011.

- Papers

  1. Atkinson, Anthony B. "On the measurement of inequality." Journal of economic theory 2.3 (1970): 244-263.
  2. Atkinson, Anthony Barnes. "On the measurement of poverty." Econometrica: Journal of the Econometric Society (1987): 749-764.
  3. Sen, Amartya. "Poverty: an ordinal approach to measurement." Econometrica: Journal of the Econometric Society (1976): 219-231.
  4. Alkire, Sabina, and James Foster. "Counting and multidimensional poverty measurement." Journal of public economics 95.7-8 (2011): 476-487.
  5. Alkire, S., Roche, J. M., Santos, M. E., Seth, S. (2011). Multidimensional poverty index 2011: brief methodological note.
  6. Klugman, Jeni, Francisco Rodríguez, and Hyung-Jin Choi. "The HDI 2010: new controversies, old critiques." The Journal of Economic Inequality 9.2 (2011): 249-288.

7. Marrero, Gustavo A., and Juan G. Rodríguez. "Inequality of opportunity and growth." Journal of Development Economics 104 (2013): 107-122.
8. Marrero, Gustavo A., and Juan Gabriel Rodríguez. "Inequality of opportunity in Europe." Review of Income and Wealth 58.4 (2012): 597-621.
9. Foster, J. E. and Shorrocks, A. F. (1988a). Poverty orderings. Econometrica, 56(1):173-177.
10. Foster, J. E. and Shorrocks, A. F. (1988b). Poverty orderings and welfare dominance. Social Choice and Welfare, 5(2-3):179-198.
11. Foster, James, Joel Greer, and Erik Thorbecke. "The Foster–Greer–Thorbecke (FGT) poverty measures: 25 years later." The Journal of Economic Inequality 8.4 (2010): 491-524.
12. Foster, J., Greer, J., Thorbecke, E.: A class of decomposable poverty measures. Econometrica 52, 761–776 (1984)
13. Sarkar, Sandip, and Manoranjan Pal. "On the Estimation of Lower and Upper Bounds of Poverty Line: An Illustration with Indian Data." Social Indicators Research 138.3 (2018): 901-924.
14. Montalvo JG, Reynal-Querol M (2012) Inequality, polarization and conflict. In: Garifinvel, Skaperdas (2012)
15. Sarkar, Sandip, and Sattwik Santra. "Extending the approaches to polarization ordering of ordinal variables." The Journal of Economic Inequality 18.3 (2020): 421-440.
16. Mitra, Anirban, and Debraj Ray. "Implications of an economic theory of conflict: Hindu-Muslim violence in India." Journal of Political Economy 122.4 (2014): 719-765.
17. Dasgupta P, Sen AK, Starrett D (1973) Notes on the measurement of inequality. J Econ Theory 6.

- Internet Resources

1. UNDP: Technical resources. Link

8 Optional Courses

8.1 Behavioral Economics and Experiments using zTree

Course Introduction and Objectives

This course is designed to provide training in Behavioral Economics to allow students to apply the tools and methods discussed in class on their own rather than just passively absorb some definitions and formulas. The entire course strongly emphasizes some concrete, real-life/hypothetical examples. The course also contains a part where students will learn how to design an experiment and collect data from real life. This will allow interested students to design, write, and conduct their experiments. This will help to develop their research mentality and training. The approach of the course is theoretical, analytical and practical. This course will also help students to learn how to do a literature survey and present research papers. Strong attention is diverted to enhance the art of applying and relating concepts to real-life and writing code in zTree to conduct mini-research.

Course Outcomes

Students will know what behavioral economics is and why recent days, behavioral economics is becoming an essential part of modern economic research. Students will learn the evolution of behavioral economics. Students will learn the difference between behavioral economics and experimental economics. Students will learn how to design, write a code and conduct an experiment to collect data. Students will be able to learn to do a literature survey and paper presentation.

Course Content

- Behavioral Economics

  1. Introduction to Behavioral Economics
  2. Foundations: Standard Model, Axioms, and Assumptions Bounded Rationality, Altruism.
  3. Economic Behavior: Beliefs, Heuristics and Biases, Standard model, probability estimation, self-evaluation bias, projection bias, cognitive bias: confirmatory bias model, other biases and heuristics, and causes of irrationality. Role of emotion: Aversion to lying, deception.
  4. Choice Theory, Decision Theory.
  5. Stochastic Dominance
  6. Decision-making under risk: Conventional approach to modifying EUT, Allais Paradox,
  7. Decision-making under uncertainty
  8. Alternate models of EUT: Disappointment theory, Regret Theory, Rank-dependent Utility, Reference-dependent Utility theory.
  9. Prospect theory - Loss aversion, S-Shaped curve
  10. Strategic Interaction: Nature of Behavioral game theory, equilibrium, bargaining, learning. Application in different games.

11. Learning from new information: Bayesian updating, Ellsberg paradox.

- Experiments using zTree

    1. Experimental Methods and approaches – the difference between behavioral and experimental economics– making good design – implementing the design – collecting data.
    2. zTree Software – Installing- Writing code in zTree – Simple survey – Prisoner's dilemma game – Dictator Game- Ultimatum game – Bargaining game. Running the game and collecting data.

Reading and References

- Textbook:

    1. An Introduction to Behavioral Economics by Nick Wilkinson and Matthias Klaes (2nd ed)
    2. Behavioral Game Theory by Experiments in Strategic Interaction by Colin F. Camerer

- Reference Books

    1. The Handbook of Experimental Economics by John H. Kagel and Alvin E. Roth.
    2. Heuristics and Biases: The Psychology of Intuitive Judgment by Daniel Kahneman and Thomas Gilovich
    3. Judgment Under Uncertainty: Heuristics and Biases by Amos Tversky
    4. Misbehaving: The Making of Behavioral Economics Book by Richard Thaler
    5. Advances in Behavioral Economics by Colin F. Camerer, George Loewenstein, Matthew Rabin
    6. Predictably Irrational by Dan Ariely.
    7. Journal articles.

8.2 Time Series Econometrics

Course Introduction and Objectives

This course familiarizes students with advanced modeling techniques using time series data. The course primarily focuses on acquainting students with technical skills along with implementation of time series models using software. Students can apply time series econometrics to a wide variety of macro and financial data problems.

Course Outcomes

On successful completion of this course, students will be able to relate to the key Concepts in time series econometrics. Students can apply time series methods to analyse various situations using time series econometrics software.Students can evaluate real world problems by Formulating and utilizing the appropriate time series models.

Course Content

1. Brief Introduction: Objectives of time series analysis; Time series components: Trend, Seasonal, Cyclical, Irregular components.
2. Box-Jenkins Methodology: Concept of stationarity and invertibility; Deterministic and stochastic trend, trend stationary and difference stationary process; Random walk model; Testing for unit roots; Autoregressive models, moving average models, mixed autoregressive and moving average models; Identification, estimation, diagnostic checking; Forecast function.
3. Autoregressive conditional heteroskedasticity (ARCH) and General ARCH (GARCH) Models: ARCH Processes; GARCH Processes; ARCH-M and GARCH-M Models.
4. VAR Models: Estimation and identification; Impulse response function; Variance decomposition.
5. Autoregressive Distributed Lag model and Cointigration analysis.

Reading and References

1. Terence C Mills: Time Series Econometrics
2. Walter Enders: Applied Econometric Time Series
3. James D Hamilton: Time Series Analysis

8.3 Public Economics

Course Introduction and Objectives

This course essentially focuses on evaluating the role of the public sector in a market economy. The course will use the recent economic analysis to study the efficiency and distributive effects of government intervention. The optimal design of government intervention – both in terms of public spending and taxation – will also be studied. The main objective of this course is to strike a balance between political and market failures in determining the form and the extent of government intervention.

Course Outcomes

Students will understand of the design of public expenditures and taxation.: Students will learn the tradeoff between equity and efficiency. Students will acquire skills to apply economic analysis to the public sector.

Course Content

1. An institutional description of the public sector: Public sector statistics and theories of public sector.
2. Market failures and government intervention: Pure public goods, club goods and local public goods, externalities, imperfect competition and asymmetric information.
3. Political economy and public sector: Voting, rent seeking and lobbying.
4. Equity and Redistribution: Inequality and poverty.
5. Taxation: Commodity tax, income tax, corporate tax and tax evasion.
6. Coexistence of multiple jurisdictions: Fiscal federalism and fiscal competition.

Reading and References

- Required Course Materials:
    1. Jean Hindriks and Gareth D. Myles. Intermediate Public Economics. MIT Press.
    2. Supplementary materials (will be provided by the instructor).
- Reference Books:
    1. Joseph Stiglitz and Jay Rosengard. Economics of the Public Sector. W. W. Norton & Company.
    2. Anthony B. Atkinson and Joseph E. Stiglitz. Lectures on Public Economics. Princeton University Press.
    3. Gareth D. Myles. Public Economics. Cambridge University Press.

8.4 Money, Banking and Finance

Course Introduction and Objectives

This is a basic course on Money, Banking and Financial Markets. The course would aim to energize the student with an introduction to the role of banking and banking institutions, central bank's role, money, role of financial markets, financial institutions and monetary policy in the economy. It would provide a good foundation for further study or opportunities in the financial services industry. There are three main components of the course. First, the role of financial markets in the economy will be considered with a particular emphasis on bond markets and interest rate determination. The course will then cover the main aspects of banks and other financial institutions before turning to an investigation of the role of money, central banking and monetary policy.

Course Outcomes

Students will be able to understand the role of Money and Banking and interest rate determination. Students will be able to understand the role of central banks. Students will be able to understand the functioning of financial markets and role of Baking in financial system.

Course Content

1. Why Study Money, Banking, and Financial Markets?
2. An Overview of the Financial System
3. Case Study: Pear-to-pear lending
4. What is Money?
5. Case Study: The future of money
6. The Meaning of Interest Rates
7. The Behavior of Interest Rates
8. The Risk and Term Structure of Interest Rates
9. An Economic Analysis of Financial Structure
10. Banking and the Management of Financial Institutions
11. Banking Industry: Structure and Competition
12. Financial Crises in Advanced Economies
13. Financial Crises in Emerging Economies
14. Central Banks: A Global Perspective
15. The Money Supply Process
16. Tools of Monetary Policy

17. The Conduct of Monetary Policy: Strategy and Tactics
18. The Foreign Exchange Market
19. The International Financial System
20. Quantity Theory, Inflation, and the Demand for Money
21. The IS Curve
22. The Monetary Policy and Aggregate Demand Curve
23. Aggregate Demand and Supply Analysis
24. Monetary Policy Theory

Reading and References

- Textbook
    1. The Economics of Money, Banking, and Financial Institutions (12th edition) by F.S. Mishkin
- Reference
    1. Dean Croushore : Money Banking - A Policy Oriented Approach
    2. Michael Brandl : Money, Banking, Financial Markets and Institutions (2017), South Western.

9 Pedagogy and Students Workload

The approach followed in this course is analytical. Students are expected to solve analytical problems in class tests and also in exams. The topics covered in this course is interconnected. Thus a student must attend all classes and ready to face class tests in short notice. This includes the possibility of surprise tests.

10 Academic Discipline and Integrity

1. Utmost care will be taken to maintain high academic integrity. There is no room for academic dishonesty in any form.
2. Students have to show the highest level of academic integrity in writing their assignments, examinations, and doing other exercises, including presentation.
3. Students are to maintain class decorum, follow the exact evaluation norms, and conduct fair examinations.
4. Strict Adherence to the XIM Manual of Policies.