HSNC University Mumbai

(2023-2024)

Ordinances and Regulations

With Respect to

Choice Based Credit System

(CBCS)

For the Programmes Under

Faculty of Arts

For the Course

M.A. Economics

Curriculum – First Postgraduate Programmes

Semester-I, II

As per New Education Policy

2023-24

Department of Economics

M. A. ECONOMICS SYLLABUS FOR 2023-24 as per NEP

Preamble:

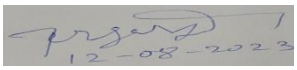
The Department of Economics strives to develop a curriculum that aims to encourage ethical, need-based, industry-endorsed and globally acceptable programmes and research.

The subject of Economics deals with consumer theory, producer theory, markets, national income, international trade, monetary policy, fiscal policy, development theories, economic thought and many more to understand individual markets as well as the aggregate economy. The curriculum will not only teach the theoretical models but it will help the students to cultivate a way of thinking that requires a critical eye and a rigorous method of logical reasoning. The subject provides a scope to analyze problems quantitatively by using a mathematical approach. Through the curriculum the students will acquire many general and specific skills which will make them adaptable to many opportunities after graduation. The first year has been divided into two semesters. Each semester includes 4 papers of 100 marks each.

Semester I: 1) **Micro Economics IV, 2) Econometrics I, 3) Mathematical & Statistical Techniques for Economics I, 4) Research Methodology, 5) Industrial Economics**

Semester II: 1) Macro Economics IV, 2) Econometrics II, 3) Mathematical & Statistical Techniques for Economics II, 4) **Indian Economic Policy**, 5) **Internship**

Signed and approved by



Chairman BOS Economics, HSNC University, Mumbai
Dr. Ravikiran R Garje
HOD Economics, K C College, Mumbai – 400020.

The curriculum tries to encourage students towards self-learning. Some of the topics have been identified for them to learn through the various online resources launched by the University Grants Commission (UGC) along with the Ministry of Education. The same topics will be used for discussions using case studies. They will be assessed using short assignments based on those materials.

The Programme Specific Objectives and Outcomes are as follows

Programme Specific Objectives:

1. To provide an advanced understanding of Economic theory.
2. To introduce diverse concepts related to economic growth and development by giving special emphasis on structural issues related to the process of development.
3. To introduce the economics of finance ad industry.
4. To familiarise the composition, direction and consequences of international trade.
5. To acquaint students with issues of Indian Economic Policy.
6. To enable students understand various environmental problems and policies.
7. To think analytically and critically using logical reasoning and relate with law.
8. To introduce interdisciplinary models through behavioral economics.
9. To encourage self-learning through online component (SWAYAM)

Program Specific Outcome (PSO):

1. Comprehend the core micro and macroeconomic principles and models.
2. Familiarity with the salient developments in the Indian and global economy, in both present-day and historical contexts.
3. Developed research and advocacy skills through critical pedagogies in the classroom and through individual and group applied projects.
4. Identify compile, interpret, and analyze quantitative economic data by expressing relationships between concepts through graphs, statistical or econometric analysis.
5. Critique and create economic research by mastering the theoretical and applied tools
6. Develop requisite skills in areas which have direct bearing on future employment prospects and meet the requirements of business, corporate sector, public services and other professional jobs.

Thus our curriculum in Economics will provide analytical and critical thinking tools to address challenges in the students' professional career.

Scheme of Teaching for 2 Year PG Economics

Semester – I

Sr. No.	Course Code	Subjects		Credits	No. of Lecture Hours
1	ECO509A	Microeconomics IV	Major	4	60
2	ECO510A	Econometrics I	Major	4	60
3	ECO511A	Mathematical and statistical techniques for economic analysis- I	Major	4	60

4	ECO512A	Research methodology	Minor	4	60
5	ECO513A	Industrial Economics	DSE	4	60

Semester – II

Sr. No.	Course Code	Subjects		Credits	No. of Lecture Hours
1	ECO514A	Macroeconomics IV	Major	4	60
2	ECO515A	Econometrics II	Major	4	60
3	ECO516A	Mathematical and statistical techniques for economic analysis-II	Major	4	60
4	ECO517A	Indian Economic Policy	Minor	4	60
5	ECO518A	Internship (100 marks) / ~~DISSERTATION~~	Minor	4	120 hrs

SEMESTER I

Syllabus Information

Course Code	Title	Credits	Lectures
ECO509A	**Microeconomics IV**	**4**	**60**

Title: Microeconomics IV

Course Objective: The objective of this paper is to develop an understanding of the basic microeconomics theory that has applications in other areas of Economics. At the end of this course students are expected to be familiar with basic microeconomics theory and acquire analytical skills to analyse problems of economic policy. Examples and exercises would be for strengthening the understanding.

Course Outcomes

1. Develop a nuanced understanding of consumer and firm behaviour.
2. Comprehend the theory of competitive Markets.
3. Develop an overview of General Equilibrium Theory along with general equilibrium theory.
4. Provide students with the necessary theoretical and analytical tools to study problems of economic policy.

Units	Modules	No. of Lectures
1	**Module I: Consumer Behaviour** Preference ordering, The feasible set, Consumption decision, Comparative statics: price and income effects, Slutsky equation, Measuring the benefits of price change, Utility maximization problem, Indirect utility function, Expenditure function.	**15**

2	**Module II: Production, Cost and Supply** Production function: properties and types, Cobb-Douglas, CES and Translog, Elasticity of substitution, Variations in scale, Variations in input proportions, Cost: Cost minimization: long run and short run, Cost function, Relation between long run and short run costs, Supply: Profit maximization and firm supply, Long run supply function, Profit function, Relationship between long and short run profit maximization	**15**
3	**Module III: Theory of Competitive Markets** Market demand and market supply curve, Short run market equilibrium, Stability of equilibrium: Walrasian and Marshallian approaches, Long run market equilibrium, Stability of long run equilibrium.	**15**
4	**Module IV: General Equilibrium and Welfare Economics** Walrasian general equilibrium of a competitive economy, Edgeworth exchange theory, Pareto criterion, First and Second theorems of welfare economics, Externalities and market failure.	**15**

Self-Learning Components (Unit Wise)

Module	**Topic**	**Swayam Link**
Module 1	**Consumer Behavior** By Prof. Srabanti Mukherjee | IIT Kharagpur Prof. Deep Mukerjee, IIT Kanpur	https://onlinecourses.nptel.ac.in/noc22_mg47/preview https://nptel.ac.in/courses/110104093
Module 2	**Production, Cost and Supply** Prof. Vimal Kumar | IIT Kanpur Prof. Deep Mukerjee, IIT Kanpur	https://onlinecourses.nptel.ac.in/noc21_hs52/preview https://nptel.ac.in/courses/110104093
Module 3	**Theory of Competitive Markets** Prof. Wasim Ahmad | IIT Kanpur	https://onlinecourses.nptel.ac.in/noc22_hs67/preview
Module 4	**General Equilibrium and Welfare Economics**	https://www.youtube.com/watch?v=jnqJnDN0PR0

References:

1. Das, S.P. (2007): Microeconomics for Business, Sage, New Delhi.
2. Gravelle H. and Rees R. (2004): Microeconomics, 3rd Edition, Pearson Edition Ltd, New Delhi.
3. Jehle, G.A. and P.J. Reny (2006): Advanced Microeconomic Theory, 2nd Edition, Pearson Education, New Delhi.

4. Tandon, P. (2015): A Textbook of Microeconomic Theory, Sage, New Delhi.
5. Varian H (2000): Intermediate Microeconomics: A Modern Approach, 8th Edition, And W.W. Nortonand Company.
6. Varian, H.B. (1992): Microeconomic Analysis, 3rd Edition, W.W. Norton and Company.

ECONOMETRICS I

Syllabus Information

Course Code	Title	Credits	Lectures
ECO510A	**Econometrics I**	**4**	**60**

Course Objective: The objective of this course is to impart a basic understanding of econometrics. At the same time, it will enhance the student's ability to apply the theoretical techniques to the problems of the real world. Topics like forecasting have been introduced to impart this practical orientation.

Course Outcome:

1. Appreciate the idea of a random variable
2. Apply the concept of random variable in various distributions
3. Conduct different hypothesis testing
4. Understand the utility of regression analysis

Units	Modules	No of lectures
1	**Module1: Idea of a random variable:** Concept of a random variable: Discrete and continuous - Expected values of a random variable-Variance of a random variable-Discrete random variables: Bernoulli, Binomial, Poisson- Continuous random variables: The normal distribution.	15
II	**Module2: Jointly distributed Random variables:** Joint and marginal distributions for bivariate random variables Conditional Probability-Conditional mean and variance–CovarianceCorrelation and Partial Correlation-Central limit theorem (without proof).	15

III	**Module 3: Statistical Inference:** Point and interval estimation- The Z distribution-The Null and Alternate hypotheses and significance testing for mean using Z distribution when population variance is known - The chi-square distribution and testing for sample variance with known population variance - The F distribution and comparing sample variances - The t distribution and hypothesis tests when population variance in unknown. Type I and Type II Error. Examples of Hypothesis.	15
IV	**Module 4: Regression Analysis:** Two variable regression model - The concept of the PRF - Classical assumptions of regression - Derivation of the OLS estimators and their variance - Properties of OLS estimator sunder classical assumptions, Gauss-Markov Theorem (without proof)–Tests of Hypothesis, model validation, confidence intervals for OLS estimators - Measures of goodness of fit: R square and its limitations, adjusted R square and its Limitations. Extension to multiple linear regression model. **Introduction to time series** Stationary and non-stationary time series, spurious regression, tests of stationarity, optimal forecasts and methods of forecast evaluation, introduction to ARIMA models	15

Self-Learning components (Unit wise)

Unit	**Topic**	**SWAYAM Link**
MODULE 1	**Prof. Siva Athreya, Indian Statistical Institute** WEEK 6 TO 12. Lec 1: Probability space and their properties, Random variables **By Prof. Siddharth Pratim Chakrabarty, Dpt. of Mathematics, IIT GUWAHATI**	https://onlinecourses.nptel.ac.in/noc22_ma27/preview Probability –I with Examples Using R https://www.youtube.com/watch?v=wjmtQWvg8g Course URL: https://swayam.gov.in/nd1_noc20_ma36/...
MODULE 2	Probability Theory and Applications by Prof. Prabha Sharma, Department of Mathematics, **IIT** Kanpur.	https://www.youtube.com/watch?v=nvMQzz80vX8

MODULE 3	Statistical Inference, IIT Delhi Prof. Nilladri Chaterjee	https://nptel.ac.in/courses/111102112
MODULE 4	Regression Analysis, IIT Kharagpur Dr. Soumen Maity Regression Analysis and Forecasting, IIT Kanpur, Prof. Shalabh R programming	https://nptel.ac.in/courses/111105042 https://nptel.ac.in/courses/111104098 **Introduction to R (https://www.youtube.com/watch?v=cz4Rv3ebR14),**

References:

1. Damodar N. Gujarati, Basic Econometrics, McGraw-Hill, Delhi, 2017.
2. Murray R. Spigel Schaum‟s Outline of Theory and Problems of Statistics, McGraw-Hill,1999
3. Jeffrey M. Wooldridge, Econometrics, Cengage Learning, India Edition, 2012.
4. Damodar Gujarati, Econometrics by Example, Palgrave Macmillan, 2011.
5. Stock J. Watson, Introduction to Econometrics, Prentice Hall, New York, 2017.

Course Code	Title	Credits	Lectures
ECO511A	**MATHEMATICAL AND STATISTICAL TECHNIQUES FOR ECONOMIC ANALYSIS- I**	**4**	**60**

Title: MATHEMATICAL AND STATISTICAL TECHNIQUES FOR ECONOMIC ANALYSIS- I

This course will equip the students to describe, interpret and understand the data and draw conclusions. With the knowledge of set theory, basics of differentiation, central tendency and measures of dispersion students will be able to appreciate the beauty of economics in quantitative terms.

Course Outcome:

1. Acquire mathematical and statistical skills
2. Assess when, why and how to apply these techniques.
3. Understand data to interpret and draw accurate conclusions that is imperative for a student of economics.

Units	Modules	No. of Lectures

1	**Module 1: Set Theory, Graphs and Derivatives** **A: Set Theory,** •Set-elements, basic operations, Functions and Graphs • Demand and Supply functions, Saving and Investment functions, Consumption Function, Market Equilibrium **B: Derivatives and their economic applications** • Derivatives • Higher order derivatives • Maxima and minima • Optimisation of economic functions	**15**
2	**Module 2: Linear Algebra** • Matrices and basic operations on matrices • Rank of a matrix	**15**
	• Inverse of a matrix • Cramer's rule • Input-Output Analysis and policy implications • Linear Programming Problem: Formulation and graphical solution	
3	**Module 3: Descriptive Statistics and graphing techniques for presenting data** • Concept of primary and secondary data along with tabulation and graphs • Measures of central tendency (only arithmetic-mean, median, and mode). • Absolute and relative measures of dispersion (range, quartile deviation, mean deviation and standard deviation) with simple applications. • Measures of skewness and kurtosis. • Lorenz Curve	**15**
4	**Module 4: Elementary Probability Theory** • Sample space and events • Mutually exclusive, exhaustive and complementary events • Conditional probability • Binomial probability distribution • Nature and Properties of the Normal Probability Distribution; Standard Scores and the Normal Curve; The Standard Normal Curve: Finding Areas when the Score is Known, Finding Scores when the Area is Known	**15**

Self-Learning components (Unit wise)

Module	**Topic**	**Self Learning Link/References**
Module 2	Matrices and basic operations on matrices	https://youtu.be/cfPL1hxDJW8 https://youtu.be/MitjVG198CI https://youtu.be/A4ZFGkAaA_U https://youtu.be/8M7qHQ_hzKY

		https://youtu.be/7zaTfh1T2C8 https://youtu.be/YGF1ny1xGAc
Module 3	Concept of primary and secondary data	Kothari, C.R., Research Methodology: Methods and Techniques, New Age International Publishers, New Delhi, 2008.
Module 4	• Sample space and events • Mutually exclusive, exhaustive and complementary events	https://youtu.be/cRKP56p9HJs https://youtu.be/wuyd6m6Ql4c

References:

1. Chiang A.C: Fundamental Methods of Mathematical Economics, 3rd Edition, McGraw Hill, 1984.
2. Dowling Edward T: Introduction to Mathematical Economics, Schaum Outline Series in Economics, Tata McGraw -Hill, New Delhi, 2004.
3. Dowling Edward T: Theory and Problems of Mathematical Methods for Business and Economics, McGraw –Hill, 1993.
4. Gupta S.P.: Statistical Methods, S. Chand, New Delhi 2014
5. Kothari, C.R., Research Methodology: Methods and Techniques, New Age International Publishers, New Delhi, 2008.
6. Lerner Joel J and P. Zima: Theory and Problems of Business Mathematics, McGraw Hill, New York, 1986.

8. Sancheti D.C. and V.K. Kapoor: Statistics-Theory, Methods and Applications, S. Chand, New Delhi, 2014

Syllabus Information

Course Code	Title	Credits	Lectures
ECO512A	**RESEARCH METHODOLOGY**	**4**	**60**

Title: RESEARCH METHODOLOGY

Course Objective: The central focus of this course is an introductory study of the concepts, principles and methods of economic research based on quantitative and qualitative data. Course Outcome:

1. Understand research methodology and provide an insight into the application of modern analytical tools and techniques for the purpose of economic decision making.
2. Acquire ability to collect primary and secondary data.
3. Interpret the statistical results to reach a meaningful research conclusion.

Units	Modules	No. of Lectures

1	**Module 1: Concept of Research and a Research Problem** Research: Meaning, Objective and Types, Research Method vs Methodology, Research Process, Criteria of good research, Problems of research, Ethical issues in research Research Problem: Selection of a research problem, Defining a research problem and techniques involved.	**15**
2	**Module 2: Research Design and Sampling** Research Design: Meaning, Need and Features and Types Sampling Technique: Census and sample survey- Essentials of a good Sampling - Advantages and limitations of sampling, Methods of sampling: Random sampling and Non-random sampling- Sampling and Non-sampling errors - Sample size – selecting an appropriate sampling technique	**15**
3	**Module 3: Data Collection, Processing and Analysis** • Primary data-Meaning and Collection methods: Observational method, Interview technique, Design of Schedule and Questionnaire, Survey method and Field Visits, Case Study as a method • Secondary data: Meaning, sources, advantages, Relevance, limitations • Classification, Tabulation and Graphical presentation of socioeconomic data • Measures of Central Tendency – Measures of Variation: absolute and relative measures – Quartile deviation, standard deviation, coefficient of	**15**
	variation	
4	**Module 4: Testing of Hypothesis and Report Writing** Definition and functions of hypothesis –Criteria of workable hypothesis – forms and sources of hypothesis, Concepts in Testing of Hypothesis: Universe / Population, parameter and statistic, Null and Alternative Hypotheses, Levels of Significance, critical region, Type I and type II errors – Tests based on Student's t , Z and Chisquare. Interpretation of Results: Meaning, Significance, Technique, Precautions Research Report: Meaning, Significance, Steps in writing research report, layout, Types of research report, Mechanics.	**15**

Self-Learning components (Unit wise)

Module	Topic	Self Learning Link/References
Module 1	Identification, selection and formulation of research problem	https://youtu.be/hDDKhzHpju0

Module 3	Concept of primary and secondary data	Kothari, C.R., Research Methodology: Methods and Techniques, New Age International Publishers, New Delhi, 2008.
Module 4	Hypothesis formulation	https://youtu.be/mllugH1GI7M
Module 4	Research Report: Organization and Style	https://youtu.be/cCbmNwvdDKc

References:

1. Bhandarkar P.L., (1994), Samajik Sanshodhan Padhati, Himalaya Publication, New Delhi.
2. Dawson, Catherine (2002), Practical research methods, UBS Publishers, New Delhi.
3. Ghosh, B.N. (1992), Scientific methods and social research, Sterling Publishers Pvt. Ltd, New Delhi.
4. Gupta S P, (1987), Statistical methods, Sultan Chand and Sons, New Delhi.
5. Kothari R.C. (2008), Research methodology, methods and techniques, New Age International Publishers, New Delhi.
6. Krishnaswamy O.R.(1993), Methodology of research in social sciences, Himalaya publishing House, Mumbai.

Course Code	Title	Credits	Lectures
ECO513A	**Industrial Economics**	**4**	**60**

Title: Industrial Economics

Course Objectives

The objective of this paper is to familiarise students to the theory of market and firms, their behaviour and determinants. It discusses the impact of advertising and innovation too. It covers topics like investment decisions, industrial finance and location theories. Finally, the paper deals with various aspects of Indian industrial growth.

Course Outcomes

- Familiarity with the concept and field of Industrial Economics
- Better understanding of firm behaviour and market performance
- Improved understanding of Investment and finance decisions of firms and industries.

Units	Modules	No. of Lectures

1	**Module 1: Industrial Economics and Theory of Firm** Structure-Conduct-Performance, Effects of Monopoly Power, Dominant Firm: Behaviour, Strategy and Public Policy, Oligopoly- Collusion: Agreement and Adherence, Determinants of Firm Structure: MergersHorizontal and Vertical-Conglomerate Integration	**15**
2	**Module 2: Technical Change** 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	**15**
3	**Module 3: Investment Decisions, Industrial Finance and Location Theory** Investment Appraisal: Nature of Investment Decisions- Net Present Value Method- Internal Rate of Return. 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, Industrial Finance: Need, Types, Sources of Finance, Theories of industrial Location: Weber and Sargent Florence	**15**
4	**Module 4: Industrial Growth in India** Industrial Growth: Trends in Industrial Growth in India-MSMEs: Definition-Role-Policy-Issues and Performance. Public and Private Enterprises in India: Performance and Constraints. Competitiveness of Indian Industries: Competition Policy, Industry 4.0: Future of Work	**15**

Self-Learning components (Unit wise)

Module	**Topic**	**Links and References**
1	MSME:	https://msme.gov.in
	Policies and Performance	
2	Trends of Industrial Growth in India	Ahluwalia I. J., Industrial Growth in India- Stagnation since the mid-sixties, Oxford University Press, Delhi,1985 and Mookherjee Dilip (eds.), Indian Industry-Policies and Performance, Oxford University Press, Delhi,1998
3	Competition Act 2002	https://www.cci.gov.in/sites/default/files/cci_pdf/competitionact2012.pdf

References:

1 Ahluwalia I. J.-Industrial Growth In India – Stagnation Since the Mid Sixties- Oxford University Press, Delhi, 1985.
2. Hay J. and Morris D. J. – Industrial Economics – Theory and Evidence, Oxford University Press (Latest Edition)
3. Martin Stephen, Industrial Economics – Economic Analysis and Public Policy, Macmillan Publishing Company, New York, 1989
4. Mookherjee Dilip (Eds), Indian Industry – Policies and Performance, Oxford University Press, Delhi, 1998.
5. Pandey I. M. –Financial Management, Vikas Pub. House Pvt. Ltd., New Delhi, 2000.
6. Paul R. Fergusson: Industrial Policy Issues and Perspectives, Macmillan Education, 1988 6. Mohanty Binod (eds.) –Economic Development Perspectives, Vol. 3, Public Enterprises and Performance – Common Wealth Publication New Delhi, 1998 Publications, New Delhi, 2009.

SEMESTER II

Syllabus Information

Course Code	Title	Credits	Lectures
ECO514A	**Macroeconomics IV**	**4**	**60**

Title: Macroeconomics IV

Course Objective: This paper is designed to provide in-depth knowledge on varied concepts of Macroeconomics. The contents of the paper throws light on a range of issues like national income, social accounting, consumption expenditure, investment analysis, inflation, trade cycle as well as money supply and demand for money.

Course Outcomes

1. Enhanced understanding of the concepts like national income and social accounting, consumption expenditure and investment analysis.
2. Debate on issues like inflation, trade cycle as well as money supply and demand for money
3. Critically analyse the different macroeconomic theories and models.

Units	Modules	No. of Lectures
1	**Module 1: National Income and Social Accounting** National Income Accounting Concepts, Accounting identities, Inflation and price indices. Social accounting-Concepts, Features and types of social accounts, National income and Product accounts, Input-output accounting, Flow of funds account	**15**

2	**Module 2: Consumption Expenditure and Investment Analysis** Absolute income hypothesis; Relative income hypothesis; Permanent income hypothesis; Life-cycle hypothesis. Investment- Types of Investment- Determinants of Investment -Marginal efficiency of capital (MEC)-Supply price of capital (SP), Prospective yield of capital (PY)-FRB-MIT (Federal Reserve Bank and Massachusetts Institute of Technology).	**15**
3	**Module 3: Inflation and Trade Cycles** Theories of Inflation: Demand pull and Cost push, Keynesian Theory, Inflation and GDP, Trade cycles, Anti cyclical policy, Theories of Trade Cycles - Hicks, Schumpeter, Goodwin and Samuelson.	**15**
4	**Module 4: Supply and Demand for Money** Components of money supply; Measures of money supply: M1, M2, M3 and M4-Determinants of Money Supply- Classical approach, Cambridge approach, Keynesian approach, Liquidity preference theory, Portfolio balance Approach: Baumol and Tobin, Milton Friedman's Approach	**15**

Self-Learning components (Unit wise)

Topic	**SLE Link**
1. Permanent income hypothesis	https://youtu.be/IxdpzYyeB7wepgpaathsahla
2. Modigliani's Life Cycle Hypothesis	https://youtu.be/-f9_Pjsmru8epgpaathshala
3. Investment, MEC	https://youtu.be/O6fjF6EtnRkepgpaathshala
4. Components and Measures of money supply	https://youtu.be/yvV7KhPJy7oepgpaathshala

References:

1. Dornbusch, Fischer, Stratz, Macroeconomics, (Revised Edition).Tata McGraw-Hill. New Delhi
2. Ahuja H. L. Macroeconomics Theory and Policy, S. Chand and Co. Ltd New Delhi.
3. Froyen R. T. Macroeconomics (7th Edition). Pearson Education. New Delhi
4. Mankiw, N. G. Macroeconomics, (Revised Edition), Worth Publications. New York.
5. Carlin, W and S David, Macroeconomics, Oxford University Press.
6. Errol D'Souza Macroeconomics, Pearson Education India-2009.

Syllabus Information

Course Code	**Title**	**Credits**	**Lectures**

ECO515A	**Econometrics II**	**4**	**60**

Course objective: The paper aims to help students understand the art of econometric model building.

Course outcome:

1. Identify failure of classical assumptions in regression models
2. Construct structural and reduced form models
3. Forecast using Time series models
4. Construct and solve LPP

Units	Modules	No. Of lectures
1	**Module 1: Failure of Classical Assumptions** Multi-collinearity and its implications -Auto-correlation: Consequences and Durbin-Watson test-Heteroskedasticity: Consequences and the Goldfeld-Quandt test.	**15**
2	**Module 2: Econometric Model Specification:** Identification: Structural and reduced form - Omitted Variables Bias-Errors in measurement-Endogeneity and Bias.	**15**
3	**Module 3: Forecasting:** Forecasting with a) moving averages b) linear trend c) exponential trend-CAGR-Forecasting with linear regression-Classical time series decomposition-Measures of forecast performance: Mean Square Error and Root Mean Square Error -Limitations of econometric forecasts.	**15**
4	**Module 4: Linear Programming:** Linear programming:- Dual of a linear programming problem, Simplex method, Transportation.	**15**

Self-Learning components (Unit wise)

Unit	Topic	SWAYAM Link
Module1	Econometric Methods By Dr. S. Pushparaj | School of Economics, Madurai Kamaraj University, Madurai, Tamil Nadu.	https://onlinecourses.swayam2.ac.in/cec20_hs14/preview

Module2	Introduction to Econometrics By Prof. Sabuj Kumar Mandal IIT Madras	https://onlinecourses.nptel.ac.in/noc22_hs66/preview
Module3	Linear Regression Analysis & Forecasting, IIT Kanpur, Prof. Shalabh	https://nptel.ac.in/courses/111104098
Module 4	Lecture Series on Fundamentals of Operations Research by Prof.G.Srinivasan, Department of Management Studies, IIT Madras. Optimization from fundamentals By Prof. Ankur A. Kulkarni | IIT Bombay An overview of Python tools for Economists	https://www.youtube.com/watch?v=qxls3cYg8to https://onlinecourses.nptel.ac.in/noc21_me10/preview https://www.youtube.com/watch?v=fi6aKSaHkjY

References:

1. Damodar N. Gujarati, Basic Econometrics, McGraw-Hill, Delhi, 2017.
2. Kapoor V. k. (2013), Operations Research Problems & Solutions, Sultan Chand & sons.
3. Lipschutz (Schaum Series), Theory and Problems of Statistics.
4. Wooldridge Jeffery M., Introductory Econometrics: A Modern Approach 6th edition, Cengage Learning, USA, 2016.
5. Stock James H. and Watson Mark W., Introduction to Econometrics, Updated 3rd Edition, Global Edition, Pearson Education Limited, 2015.
6. Makridakis Spyros and Steven C Wheelright, Forecasting Methods and Applications, Willey Publications, 2008.

Course Code	Title	Credits	Lectures
ECO516A	**MATHEMATICAL AND STATISTICAL TECHNIQUES FOR ECONOMIC ANALYSIS- II**	**4**	**60**

Title: MATHEMATICAL AND STATISTICAL TECHNIQUES FOR ECONOMIC ANALYSIS- II

Course Objective: This paper will equip the students with analyzing skills using mathematical and statistical techniques. Economic analysis and interpretation of data cannot be carried out in the

absence of knowledge of suitable techniques like partial differentiation, Integration, correlation, regression and time series.

Course Outcome:

1. Acquire mathematical and statistical skills
2. Assess when, why and how to apply these techniques.
3. Understand data to interpret and draw accurate conclusions that is imperative for a student of economics.

Units	Modules	No. of Lectures
1	**Module1: Techniques and applications of partial derivatives** • Functions of several variables and partial derivatives • Second order partial derivatives • Optimisation of multivariable functions • Constrained optimisation with Lagrange multiplier and its economic interpretation. • Marginal productivity, Income and price elasticities of demand • Homogeneous production functions and returns to scale • Cobb-Douglas production function	15
2	**Module 2: Integral Calculus** • Integration and Definite integral; area under the curve • Economic applications • Present value of cash flows (present value of a sum to be received in future and present value of a stream of future income) • Consumer's and Producer's Surplus • Learning curve	15
3	**Module 3: Correlation and Regression** • The meaning and significance of Correlation; Scatter plot of Bivariate Distributions; Correlation and Causation • Karl Pearson's coefficient of correlation • Spearman's rank correlation coefficient • Simple regression analysis- Method of Least Squares and Regression Lines • Regression Coefficients • Relationship between correlation coefficients and regression coefficients.	15
4	**Module 4: Index Numbers and Time Series** • Simple and composite index numbers • Construction, uses and problems of index numbers • Laspeyre's, Paasche's and Fisher's Index numbers • Cost of living index numbers • Splicing, deflating and base shifting • Components of time series • Estimation and forecasting of trend by the Least Squares Method	15

Self-Learning components (Unit wise)

Module	Topic	Self Learning Link/References
Module 1	Cobb-Douglas production function	https://youtu.be/gN_HWns4PWI
Module 2	Consumer's and Producer's Surplus	https://youtu.be/Yje0yyzeVSA https://youtu.be/X6ujFNCx5ME
Module 3	Measures of coefficient of correlation	https://youtu.be/gHv0tcn_E-Q
Module 4	Components of time series	https://youtu.be/KWs5Xc5c5E0

References:

1. Chiang A.C: Fundamental Methods of Mathematical Economics, 3rd Edition, McGraw Hill, 1984.
2. Dowling Edward T: Introduction to Mathematical Economics, Schaum Outline Series in Economics, Tata McGraw -Hill, New Delhi, 2004.
3. Dowling Edward T: Theory and Problems of Mathematical Methods for Business and Economics, McGraw –Hill, 1993.
4. Gupta S.P.: Statistical Methods, S. Chand, New Delhi 2014
5. Kothari, C.R., Research Methodology: Methods and Techniques, New Age International Publishers, New Delhi, 2008.
6. Lerner Joel J and P. Zima: Theory and Problems of Business Mathematics, McGraw Hill, New York, 1986.

8. Sancheti D.C. and V.K. Kapoor: Statistics-Theory, Methods and Applications, S. Chand, New Delhi, 2014

Course Code	Title	Credits	Lectures
ECO517A	**Indian Economic Policy**	**4**	**60**

Title: Indian Economic Policy

Course Objective: This course presents an analytical framework within which the Indian economic policy is formulated and implemented. Indian economic policy influences the economic environment and in turn is conditioned by the environment. We would present and integrated approach to different aspects of policy making. In the background of Indian economic development during the last six decades, trade Policy and at the sectoral level, Agricultural Policy, Industrial Policy, and Policies relating to services sector have been discussed. Monitoring and implementation of economic policies have also been examined.

Course Outcome:

1. Understand the characteristics of Indian Economy
2. Critically appreciate the development and planning strategies
3. Critique the sectoral developments in the Indian economy

4. Debate on the foreign trade policies

Units	Modules	No. of Lectures
1	**Module 1: Characteristics of the Indian Economy** Features and Characteristics of the Indian Economy, Trends and Structure, Demographic features, National income, Growth and Structural Change in the Indian Economy, Poverty, Inequality	15
2	**Module 2: Development and Planning Strategies in India** **Evolution of planning** State Planning and Markets: Policy Choices as visualised in five-year plans, Economic Reforms in India, Major Developments in Post Economic Reforms Period Role of Planning in Market Economy, Redefining Role of State NITI AYOG: Role and Functions	15
3	**Module 3: Sectoral Developments and Sector Specific Policies** Issues and Concerns of Indian Agriculture, Agricultural Policy of India, Industrial Development in India: An Overview, Industrial Policy and FDI in India Services Sector, Policies Relating to Services Sector	15
4	**Module 4: External Sector and Foreign Trade Policies** Foreign Trade and Balance of Payments, Salient features of India's foreign trade Foreign Capital, Trade Policy, Composition, direction and organisation of trade, Recent changes in trade, tariff policy, India and WTO, Bilateral Trade Agreements and their implications	15

Self-Learning components (Unit wise)

Module	Topic	Self-Learning Link/References
Module 1	National income	https://epgp.inflibnet.ac.in/epgpdata/uploads/epgp_content/S000023MA/P001405/M016057/ET/1465207089Module29Text.pdf
Module 2	NITI AYOG: Role and Functions	https://www.niti.gov.in/content/functions
Module 3	FDI in India	https://epgp.inflibnet.ac.in/epgpdata/uploads/epgp_content/S000438BE/P000728/M018756/ET/1515494552BSE_P9_M26Etext.pdf
Module 4	India and WTO	https://www.youtube.com/watch?v=AOnG_0C2g6M

References:

1. Agrawal A.N. (2006): Indian Economy: Problems of Development and Planning , A Division of New Age International (P): Limited, New Delhi.

2. Bawa, R.S. and P.S. Raikhy (Ed.) (1997), Structural Changes in Indian Economy, Guru Nanak Dev University Press, Amritsar.
3. Brahmananda, PR. And V.R. Panchmukhi (Eds.) (2001), Development Experience in the Indian Economy: Inter-state Perspectives, Book well, Delhi.
4. Dutt R and KPM Sundharam (2002): Indian Economy: S. Chand New Delhi.
5. Misra S.K. and V.K. Puri, (2020): Indian Economy, Himalaya, Publishing house, Mumbai.
6. Uma Kapila (2019): Indian Economy-Since Independence-17th Edition, Academic Foundation
7. IGNOU MEC-105 Reference Material – Indian Economic Policy

SUBJECT CODE	**TITLE OF SUBJECT**	**CREDITS**	**NO. OF LECTURES**
ECO518A	**INTERNSHIP** 1) INTERNSHIP & REPORT 50 marks 2) Presentation 30 marks 3) Viva voice 20 marks	**4**	**60 (120 HRS)**

Evaluation Criteria and Question Paper Pattern

Division of Marks: 40-60

Continuous assessment and Evaluation (CAE): 40 marks

	Internal Evaluation of 40 Marks	
	Particulars	**Marks**
A	SLE/ Project/ Assignment/ Research Paper/ Academic essay/ etc	20
B	Presentation/Viva based on A, Active participation in class/class test/case study analysis	20

Semester End Examination (SEE) : 60 marks **Duration : 2 Hours**

Question	**Particulars**	**Marks**
1	From Unit 1 with internal choice	15
2	From Unit 2 with internal choice	15
3	From Unit 3 with internal choice	15
4	From Unit 4 with internal choice	15