VIDYASAGAR UNIVERSITY

Midnapore, West Bengal

PROPOSED CURRICULUM & SYLLABUS (DRAFT) OF

BACHELOR OF SCIENCE (HONOURS)

MAJOR IN ECONOMICS

4-YEAR UNDERGRADUATE PROGRAMME

(w.e.f. Academic Year 2023-2024)

Based on

Curriculum & Credit Framework for Undergraduate Programmes

(CCFUP), 2023 & NEP, 2020

VIDYASAGARUNIVERSITY
BACHELOR OF SCIENCE (HONOURS) MAJOR IN ECONOMICS
(Under CCFUP, 2023)

Level	YR.	SEM	Course Type	Course Code	Course Title	Credit	L-T-P	Marks		
								CA	ESE	TOTAL
B.Sc. (Hons.)	2nd	III	SEMESTER-III							
			Major-3	ECOHMJ03	T: Mathematical Methods in Economics-I	4	3-1-0	15	60	75
			Major-4	ECOHMJ04	T: Statistical Methods for Economics - I	4	3-1-0	15	60	75
			SEC	ECOSEC2	P: Intermediate Statistics and its Applications (Practical)	3	0-0-3	10	40	50
			AEC	AEC02	CommunicativeEnglish-2 (***common to all programmes***)	2	2-0-0	10	40	50
			MDC	MDC03	Multidisciplinary Course -3(***to be chosen from the list***)	3	3-0-0	10	40	50
			Minor (Disc.-I)	ECOMIN03	T: Development Economics ***(To be taken by students of other Disciplines)***	4	3-1-0	15	60	75
					Semester-III Total=	20				375
		IV	SEMESTER-IV							
			Major-5	ECOHMJ5	T: Intermediate Microeconomics – I	4	3-1-0	15	60	75
			Major-6	ECOHMJ6	T: Intermediate Macroeconomics – I	4	3-1-0	15	60	75
			Major-7	ECOHMJ7	T: Mathematical Methods in Economics-II	4	3-1-0	15	60	75
			AEC	AEC04	MIL (Bengali/Hindi) -2(***common to all programmes***)	2	2-0-0	10	40	50
			Minor (Disc.-II)	ECOM4	T: Features of Indian Economy ***(To be taken by students of other Disciplines)***	4	3-1-0	15	60	75
			Summer Internship	IA	Internship/Apprenticeship (Major Discipline)	4	0-0-4	-	-	50
					Semester-IV Total=	22				400
					TOTAL of YEAR-2	42				775

MJ = Major, MI = Minor Course, SEC = Skill Enhancement Course, AEC = Ability Enhancement Course, MDC = Multidisciplinary Course, CA= Continuous Assessment, ESE= End Semester Examination, T = Theory, P= Practical, L-T-P = Lecture-Tutorial-Practical, MIL = Modern Indian Language

SEMESTER-III

MAJOR (MJ)

MJ-3: Mathematical Methods in Economics-I **Credits 04 (Full Marks: 75)**

MJ-3T: Mathematical Methods in Economics-I **Credits 04**

Course Learning Objectives:
The course consists of some mathematical techniques to teach the students various mathematical methods and to deal with economic problems quantitatively.

Course Learning Outcome:
Students will learn mathematical techniques like sets and set operations; Differential and Integral Calculus; Difference and Differential Equations among others. These mathematical techniques will prepare the students to study and analyse various economic problems quantitatively. The course will be helpful to other courses in the programme.

Course Content:

Unit 1: Preliminaries
Logic and proof techniques; sets and set operations; Cartesian product; Concept of Euclidean Space; functions and their properties; Convex sets; geometric properties of functions: convex functions, their characterizations, properties; quasi-convex functions, their characterizations & properties.

Functions of one real variable
Continuous functions of different types and their graphs- quadratic, polynomial, power, exponential, and logarithmic; Concepts of 'range', 'domain' and 'mapping'; convex, concave and linear functions.

Unit 2: Differential and Integral Calculus
Concept of differentiation - Rules of differentiation -partial and total differentiation- Euler's theorem (statement only)

Single variable optimization
Local and global optima; Geometric characterizations; characterizations using calculus; Applications in Economics- profit maximization and cost minimization

Integration of functions
Integration of different types of functions; Techniques of definite integral; Applications in economics- obtaining total from the marginal

Unit 3: Difference Equations
Finite difference; Equations of first and 2nd orders and their solutions; Application in Economics- Cobweb model

Unit 4: Differential Equations

Linear differential equation of the first and second order

4.3 Short run and long run costs: total cost, total variable cost, total fixed cost, average cost, marginal cost, short run average cost and long run average cost

Suggested Readings:

1. K. Sydsaeter and P. Hammond, Mathematics for Economic Analysis, Pearson Educational Asia: Delhi, 2002.
2. Mukherji and S. Guha: Mathematical Methods and Economic Theory, Oxford University Press, 2011
3. Apostol T.M. Calculus, Volume 1, One-variable calculus, with an introduction to linear algebra, (1967) Wiley, ISBN 0-536-00005-0, ISBN 978-0-471-00005-1
4. K. G. Binmore, Mathematical analysis, Cambridge University Press, 1991.
5. R.V. Hogg and A.T. Craig, An Introduction to Mathematical Statistics, Third Edition, Amerind, New York, London
6. Kenny and Keeping, Mathematics of Statistics, Van Nostrand.
7. Alpha C. Chiang and Kevin Wainwright, Fundamental Methods of Mathematical Economics, McGraw Hill Education, Fourth Edition, 2013

MJ-4: Statistical Methods for Economics - I **Credits 04 (Full Marks: 75)**

MJ-4T: Statistical Methods for Economics – I **Credits 04**

Course Objectives:
This course aims to introduce statistical methods essential for economic analysis, covering data collection, presentation, and summarization techniques. Students will explore measures of central tendency, dispersion, correlation, regression, index numbers, and vital statistics, with a focus on Indian official statistics.

Course Outcomes:
Students will develop skills to analyze and represent data, apply descriptive and inferential statistical tools, and evaluate demographic and economic indicators. They will also gain familiarity with Indian statistical systems and their applications in real-world economic scenarios.

Course Content:

Unit 1: Introductions to Statistical Methods
The subject matter of statistics, Collectionof data, Scrutiny of data,Presentation of numerical data, Diagrammatic representation of data, Summarization of data, Attribute and Variable, Discrete and continuous variables, Frequency distribution of a variable, Graphical representation of frequency distribution of a variable.

Unit 2: Measures of Central Tendency, **Dispersion, Skewness and Kurtosis**
Arithmetic mean, median and mode, Comparison of mean, median and mode, Other measures of central tendency.
Meaning of dispersion, Range, Mean deviation, Standarddeviation, Quartile deviation, Measures of relative dispersion, Curve ofconcentration, Moments, Central moments expressed in terms of moments aboutan arbitrary origin, Measures of skewness and kurtosis based on moments.

Unit 3: Correlation and Regression
Bivariate data, Scatter diagram, Correlation coefficient, Properties of the correlation coefficient, Regression lines. Properties of regression lines

Unit 4: Index Numbers, Vital Statistics and Indian Official Statistics
Purpose of the construction of Index Numbers, Price and quantity index number; Different formula;

Tests for an ideal index number; application- Cost of living index; Real GDP

Measurement of Mortality: Crude death rate, specific death rate, infant mortality rate, maternal mortality rate: Life table – description, properties; Measurement of fertility: Crude birth rate, specific birth rate, total fertility rate; Measurement of population growth: gross and net reproduction rates.

Population statistics, Agricultural statistics, Industrial statistics, Price statistics, National Accounts statistics (NAS), CSO, NSSO, MOSPI and RBI statistics.

Suggested Readings:

1. Goon. A.M, Gupta M.K. and Dasgupts. B..Fundamentals of Statistics, Vol I and II ,The World Press Pvt Ltd,Calcutta.
2. Jay L. Devore, Probability and Statistics for Engineers, Cengage Learning, 2010.
3. John E. Freund, Mathematical Statistics, Prentice Hall, 1992.
4. Richard J. Larsen and Morris L. Marx, an Introduction to Mathematical Statistics and its applications, Prentice Hall, 2011.
5. William G. Cochran, Sampling Techniques, John Wiley, 2007.
6. R.V. Hogg and A.T. Craig , An Introduction to Mathematical Statistics, Third Edition, Amerind, New York, London
7. Mood, A.M., F.A.Greybill and D.C. Boes: Introduction to the theory of statistics, McGraw Hill, 1974

MINOR (MI)

MI – 3: Development Economics **Credits 04 (Full Marks: 75)**

MI – 3T: Development Economics **Credits 04**

Course Objectives:
This course aims to provide students with a clear understanding of the concepts of economic development and growth, highlighting the differences between the two. It will cover key growth indicators, such as net national income and per capita income, and delve into human development indices. Students will explore various economic growth models, analyze poverty and inequality, and examine the role of political and economic institutions in shaping development.

Course Outcomes:
By the end of this course, students will be able to differentiate between economic growth and development, interpret development indicators like HDI, and compare development trajectories across nations. They will gain insights into economic growth models, understand the measurement and implications of poverty and inequality, and critically assess the role of institutions in influencing economic and political outcomes.

Unit 1: Meaning of Economic Development and Growth:

Distinction between Economic Growth and Economic Development; Net National Income and Per Capita Income as Growth Indicators construction and interpretation of HDI; International variations in development measures; comparing development trajectories across nations and within them, Dependency school of development

Unit 2: **Economic Growth**
An overview and policy implications of one sector growth models- Harrod- Domar,

Unit 3: Poverty and Inequality
A comparison of commonly used inequality measures; Gender Inequality, connections between inequality and development; poverty measurement, HPI; poverty traps.

Unit 4: Political Institutions and the State
Definition of institutions, Evolution of Political and Economic Institutions

Suggested Readings:

1. Debraj Ray, Development Economics, Oxford University Press, 2009.
2. Kaushik Basu, Analytical Development Economics, OUP
3. Amartya Sen, Development as Freedom, OUP, 2000.
4. Todaro, M.P: Economic Development in the Third World,Longman, New York.

SKILL ENHANCEMENT COURSE (SEC)

SEC 3: Intermediate Statistics and its Applications (Practical) **Credits 03**

SEC 3P: Intermediate Statistics and its Applications (Practical) **Full Marks: 50**

Course Objectives:
This course aims to equip students with practical knowledge of statistical methods and their applications in economic data analysis. It focuses on developing skills in data tabulation, computation of descriptive statistics, and interpretation of results. Students will learn to apply advanced techniques such as regression, correlation, hypothesis testing, and analysis of variance (ANOVA) using MS-EXCEL to solve real-world economic problems.

Course Outcomes:
Upon completion, students will be proficient in organizing and analyzing univariate, bivariate, and multivariate data. They will gain the ability to interpret statistical results, including correlation, regression, and hypothesis tests, and apply these techniques in economic contexts. The course will also enable them to use MS-EXCEL effectively for statistical analysis, enhancing their decision-making and research capabilities in economics.

Unit 1: Regression:
Estimation of regression lines using MS-EXCEL; Interpretation of regression results

Unit 2: Correlation:
Covariance and correlation matrix using MS-EXCEL; Correlation from regression results; Interpretation of results

Unit 3: Tabulation and Analysis of Univariate, Bivariate and Multivariate Raw Data:
Tabulation through grouped frequency distributions; Evaluation and interpretation of descriptive statistics; Analysis of bivariate and multivariate data

Unit 4: Tests of Hypothesis and Analysis of Variance (ANOVA):
T-test and F-test using MS-EXCEL; One way ANOVA using MS-EXCEL; Idea of two and multi way ANOVA.

Distribution of Marks
Continuous Assessment (CA) = 10 Marks
End Semester Examination (ESE) = 40 Marks (Hands on Practical = 20; Practical Note Book: 10; Viva: 10)

Note: The Practical Note Book will contain clear explanations, calculations and interpretations of each topic.

SEMESTER-IV

MAJOR (MJ)

MJ-5: Intermediate Microeconomics - I **Credits 04 (Full Marks: 75)**

MJ-5T: Intermediate Microeconomics - I **Credits 04**

Course Objective

This course is offered to the students to grasp the knowledge on some advanced topics on consumer behavior and producer behavior under the nomenclature of Intermediate Microeconomics I. It also covers the topics on the optimization roles of the firms under perfectly competitive, monopoly and monopolistically competitive markets. Finally it covers how price of labour is determined in a competitive labour and commodity markets.

Course Learning Outcomes

The students will be able to learn how consumers and producers make surplus in their activities and be able to learn how the decision of consumers will change under uncertainty conditions. The readers will be able to learn how the firms under perfectly competitive, monopoly and monopolistically competitive markets optimize their objectives. They will also be able to learn how wage rate of the labour is determined by the labour market equilibrium.

Course Contents:

Unit 1: Consumer Theory

Consumer's Surplus under Indifference Curve Approach and Marshallian Approach; compensating and equivalent variations; Slutsky equation; Derivation of demand curve; consumption-leisure choice and labour supply; choice under uncertainty (expected utility and risk aversion), inter- temporal choice and savings decision

Revealed Preference Approach- Axioms of revealed preference; Derivation of indifference curve; Derivation of the demand curve

Unit 2: Theories of Production and Cost

Production functions: Fixed proportion, perfect substitutes, Cobb–Douglas Production Function, CES Production Function; Homogenous and homothetic production functions; Primal problem and Dual Problem Relation between short run and long run costs-Envelope Theorem; Cost elasticity of output

Unit 3: Perfect Competition, Monopoly and Monopolistic Competition

Perfect Competition: Short run and long run equilibrium; determination of the supply curve of the firm and the industry in short run; long run supply curve of the industry under constant, decreasing and increasing cost conditions

Monopoly: Features; Revenue and cost functions; Short run and long run equilibrium of the Monopolist; multiplant monopoly; Revenue Maximizing Monopolist; Natural Monopoly; Price

discrimination-different degrees; Peak-load pricing; Two-part tariff; Efficiency analysis of the monopoly market; Taxation on monopoly; Price ceiling under monopoly; Measurement of monopoly power

Monopolistic Competition: Features; Revenue and cost functions; Non-price competition; Short run and long run equilibrium; Long run equilibrium under price competition; Efficiency analysis of the monopolistically competitive market

Unit 4: Input Markets under Perfect Competition

Returns to scale and product exhaustion; Marginal productivity theory of distribution; Derived demand for labour input; marginal product and marginal revenue product of labour; Demand for labour when other factors are variable; Market Demand for Labour; Market supply under a Competitive Labour Market; Determination of wage rate under competitive market

Suggested Readings:

1. Hal R. Varian, Intermediate Microeconomics, a Modern Approach, W.W. Norton and Company/Affiliated East-West Press (India), 8th edition, 2010. The workbook by Varian and Bergstrom may be used for problems.
2. C. Snyder and W. Nicholson, Fundamentals of Microeconomics,Cengage Learning (India), 2010
3. Hugh Gravelle and Ray Rees.Microeconomics, Prentice Hall (UK); 3rd edition, 2004.
4. AnindyaSen, Microeconomics: Theory and Applications, Oxford University Press
5. Pindyck, Rubinfeld and Mehta, Microeconomics, Pearson
6. as, Ramesh Chandra, Microeconomics: Theory and Practice (Second Edition), 2017, Kunal Books, New Delhi
7. B. Douglas Bernheim and Michael D. Whinston, Microeconomics, Tata McGraw- Hill (India), 2009.

MJ-6T: Intermediate Macroeconomics - I **Credits 04 (Full Marks: 75)**

MJ-6T: Intermediate Macroeconomics – I **Credits 04**

Course Objective:

This course aims to provide students with an in-depth understanding of intermediate macroeconomic theories, focusing on income determination, aggregate demand and supply, and the dynamic interactions between inflation, unemployment, and expectations. Through a blend of theoretical frameworks and practical applications, students will explore how fiscal and monetary policies impact the broader economy.

Course Learning Outcome:

Upon completion of this course, students will be able to critically analyze and apply key macroeconomic models, such as the IS-LM framework and the AD-AS model, to real-world economic scenarios. They will also develop the skills to evaluate the implications of policy decisions on economic stability, growth, and employment.

Course Contents: Income Determination in the short-run

Unit 1: Simple Keynesian System: Equilibrium in both closed and open economy and stability; Impact of autonomous expenditures, different closed and open economic multipliers; balanced budget, paradox of thrift.

Unit 2: IS-LM Model: Equilibrium in the commodity and money markets, derivation of IS and LM curves, Unusual IS and LM curves; Effects of fiscal and monetary policies; Crowding-out and Crowding-in effects; Phase diagram; Policy mixture for a targeted output and interest rate

Unit 3: Aggregate Demand and Aggregate Supply
Derivation of aggregate demand assuming price flexibility; Derivation of aggregate supply curves both in the presence and absence of wage rigidity; equilibrium, stability, and comparative statics- effects of monetary and fiscal policies; Unemployment and its causes- possible solutions, including real balance effect and wage cut policy.

Unit 4: Inflation, Unemployment and Expectations
Relationship between inflation and unemployment: short-run and long-run trade-offs; examination of the Phillips curve under adaptive expectations and the implications of rational expectations.

Suggested Readings:

1. Dornbusch, R., Fischer, S., & Startz, R. (2010). Macroeconomics (11th ed.). McGraw Hill.
2. Mankiw, N. G. (2010). Macroeconomics (7th ed.). Worth Publishers.

3. Sheffrin, S. M. (1996). Rational Expectations (2nd ed.). Cambridge University Press.
4. Abel, A. B., & Bernanke, B. S. (2011). Macroeconomics (7th ed.). Pearson Education, Inc.
5. Froyen, R. T. (2016). Macroeconomics (10th ed.). Pearson Education Asia.
6. Branson, W. (2014). Macroeconomic Theory and Policy (3rd ed.). East West Press. (Indian reprint)
7. Sikdar, S. (2020). Principles of macroeconomics. Oxford University Press.
8. Acharyya, R. (2022). International Economics: An introduction to theory and policy. Oxford University Press.
9. Krugman, P. R., & Obstfeld, M. (2009). International economics: Theory and policy. Pearson Education.
10. Banerjee, D., & Das, R. C. (2018). Macroeconomics: From short run to long run. Sage Publications, New Delhi.
11. D. Banerjee, D. & R. C. Das-Modern Macroeconomics, 1st Edition, Routledge, London, UK, 2024
12. Levačić, R., & Rebmann, A. (1982). Macroeconomics: An introduction to Keynesian-Neoclassical controversies. Macmillan.

MJ-7: Mathematical Methods in Economics-II **Credits 04**

MJ-7T: Mathematical Methods in Economics-II **Credits 04**

Course Learning Objectives:
The course consists of some branches of mathematics along with different Mathematical models for analysing Economic problems to teach the students various mathematical methods and to deal with economic problems quantitatively.

Course Learning Outcome:
Students will learn various branches of mathematics like Matrix Algebra, Functions of several variables, and Simultaneous Equation Systems among others along with different Mathematical models in Economic Analysis. These mathematical techniques will teach the students to study and analyse various economic problems quantitatively. The course will be helpful to other courses in the programme.

Course Contents:

Unit 1: Matrix Algebra
Matrix: its elementary operations; different types of matrix; Rank of a matrix; Determinants and inverse of a square matrix; solution of system of linear equations; Eigen values and Eigen vectors. System of nonlinear equations- Jacobian determinant and existence of solution

Unit 2: Functions of several variables
Continuous and differentiable functions: partial derivatives and Hessian matrix; Homogeneous and homothetic functions; Euler's theorem, implicit function theorem and its application to comparative statics problems; Economic applications- theories of consumer behaviour and theory of production
Maxima and Minima (Extrema) of Functions:
Relative (local) and absolute (global) extrema - The first derivative and the second derivative test Convexity and Concavity of functions; Extrema of functions of several variables without and with constraints - First and second order conditions for optimization without constraints; Optimization with constraints - The method of Lagrange multiplier.

Unit 3: Mathematical models in Economic Analysis
Microeconomics: Consumer Behaviour, Production and Cost, Market, Stability Analysis, Applications of Difference and Differential Equations. Macroeconomics - Multipliers, Comparative Static - SKM, IS-LM, The interaction of inflation and unemployment, Samuelson's multiplier-accelerator interaction model
Simultaneous Equation Systems: Algebraic and geometric expositions
Linear and non-linear simultaneous systems; Application in Economics SKM, IS-LM Model; Simple non-linear small open economy trade models

Unit 4: Leontief Static Input-Output Model
Features, Determination of Gross Outputs, Hawkins Simon conditions, Consumption Possibility

Locus, Prices in the Leontief System, Linear Programming Formulation, Distinction between open and closed model; Uses of the model

Suggested Readings:

1. K. Sydsaeter and P. Hammond, Mathematics for Economic Analysis, Pearson Educational Asia: Delhi, 2002.
2. Lawrence Blume and Carl Simon. Mathematics for Economists, W. W. Norton andCompany, 1994.
3. Alpha Chiang and Kevin Wainwright, Fundamental Methods of Mathematical Economics, Fourth Edition, McGraw-Hill, 2005

MINOR (MI)

MI-4: Features of Indian Economy **Credits 04 (Full Marks: 75)**

MI-4T: Features of Indian Economy **Credits 04**

Course Objectives:
This course aims to provide students with a comprehensive understanding of the structure and dynamics of the Indian economy. It explores the sectoral distribution of national income, issues related to poverty, unemployment, and population growth, and the role of government policies in addressing these challenges. The course also covers key sectors such as agriculture, industry, and banking, along with an analysis of public finance and India's foreign trade in the post-liberalization era.

Course Outcomes:
By the end of this course, students will be able to assess the sectoral composition of the Indian economy and understand the changes since the inception of planning. They will analyze the effectiveness of poverty eradication programs and employment policies, understand the interaction between population growth and economic development, evaluate key agricultural and industrial policies, and critically examine the role of banking and monetary policy. Students will also gain insights into India's fiscal structure and foreign trade trends in the post-liberalization period.

Course contents:

Unit 1: Structure of Indian Economy
• Sectoral distribution of National Income and its change since inception of Planning.
• Inequalities in Income distribution
• Poverty, Poverty eradication programmes and their effectiveness
• Government policies in reducing unemployment and underemployment.

Unit 2: Population and economic development
• Size and growth rate of population in India.
• Interactions between population and economic development

Unit 3: Major Sectors
Agriculture
• Land reforms and its appraisal
* Causes of low productivity.
• New agricultural policy; Green revolution and its prospects.
• **Industry**
• Review of Industrial growth under planning.
• Role of small-scale industries and policy perspective to help them.
Banking
• Role of Indian Commercial Banks and Reserve Bank of India.
• Monetary Policy of the Reserve Bank of India. .

Unit 4: Public Finance and Foreign Trade

• Sources of Revenue and Expenditure of Union and State Government.
• Union-State Financial Relation.
• Volume and direction of India's foreign trade in the post-Liberalization period.

Suggested Readings:

1. Dutta R. and K.P.M. Sundaram: Indian Economy, S. Chand and Co. New Delhi
2. Misra S.K.V. K. Puri: Indian Economy, Himalayas Publishing Co. Mumbai.
3. Agarwal A.N: Indian Economy, Vikash Publishing Co. Delhi