Four Year Undergraduate Programme
Subject: Economics

Program Specific Outcomes (PSO):

- Apply quantitative techniques to analyze and interpret economic data effectively.
- Analyze economic phenomena using appropriate theoretical frameworks and methodologies.
- Synthesize economic concepts and principles to address real-world socio-economic challenges.
- Demonstrate proficiency in economic research by formulating hypotheses, collecting relevant data, and drawing meaningful conclusions.

First Semester

Course Name: Introductory Economics

Course Code: ECO010104

Existing Base Syllabus: UG CBCS Syllabus

Course Level: 100-199

Prerequisites: -	NIL
Theory Credit:	04
Practical Credit:	NIL
No. of Required Classes:	
No. of Contact Classes:	60

No. of Non-contact Classes: NIL

Course Outcomes:

CO-1: Interpret national income and its measurement

CO-2: Apply the idea of equilibrium to basic macroeconomics

CO-3: Analyze the essence of the economic problem

CO-4: Analyze different types of taxation, government budgets, revenue and capital components, as well as fiscal and primary deficits.

CO-5: Examine the role of markets in the economy

Unit No	Unit Content	No. of Classes	Marks
1	**The Essences of the Economic Problem:**	15	25
	Scarcity and Alternative Usability of Resources, Problem of Choice and Optimization by an Economic Agent. The Notion of Opportunity Cost. Notions of Individual Demand and Supply. Individual Demand Function, Demand Curve and the Law of Demand, Shift of the Demand Curve, The Idea and calculation of Elasticity: Price, Income and Cross Elasticities of Demand and their Significance. Cost of Production and Supply. Elasticity of supply.		
2	**Market and Its Role in the Economy**	**12**	**20**
	Market and its Different Forms - Perfectly Competitive Market versus Monopoly. Individual Demand to Market Demand, Individual Supply to Market Supply. Price determination in a Competitive Market. Stability of the Competitive Market Equilibrium. Consumers' and Producers' Surplus and Efficiency of the Markets Equilibrium.		
3	**National Income and its Measurement**	**10**	**15**
	From Microeconomics to Macroeconomics. Income (Hicks' Definition), Domestic Income and National Income, GNP and its Measurement, Circular Flow of the Economy, NDP at Factor Cost as Domestic Income. Personal and Disposable Income,		

	Purchasing Power Parity. Concepts of Unemployment, Inflation and Recession. Balance of Payment –current and capital accounts		
4	**Macroeconomic Equilibrium and Income Determination**	**12**	**20**
	Idea of Equilibrium as Applied to a Basic Macroeconomy, Ex Post and Ex Ante Savings and Investment, Keynes' Approach of Aggregate Effective Demand and Determination of Income, Multiplier Analysis		
5	**Basic Concepts in Public Finance Operations**	**12**	**20**
	Definition of Tax, Direct and Indirect Tax, Tax Rate, Buoyancy and Elasticity of a Tax, Proportionate, Progressive and Regressive Taxation. Government Budget and Its Revenue and Capital Components; Fiscal and Primary Deficits.		

Readings:

1. N C Ray, *Microeconomic Theory*, MacMillan
2. Dominick Salvatore, Microeconomic Theory, Schaum's Outline Series, McGraw Hill
3. Soumyen Sikdar, *Principles of Macroeconomics*, Oxford

Second Semester

Course Name: Basic Elements of Economics

Course Code: ECO020104

Existing Base Syllabus: UG CBCS Syllabus

Course Level: 100-199

Prerequisites: - No

Theory Credit: 04

Practical Credit: NIL

No. of Required Classes:

No. of Contact Classes: 50

No. of Non-contact Classes: 10

Course Outcome:

CO 1: Describe the Indian economy in terms of its income and demographic features

CO 2: Discuss the various measures of development

CO 3: Explain the functioning of a financial system

CO 4: Use the relevant statistical tools to systematically examine any given economic

phenomenon

CO 5: Compare the current events of the global and national economy

Unit No	Unit Content	No. of Classes	Marks
1	**Basics of data collection**	**20**	**25**
	Primary and Secondary, Census versus Sample Survey, Distinction between population and sample, Distinction between population parameters and sample statistics, Principal steps in a sample survey, Methods of sampling - random, stratified, multi-stage and systematic random sampling. Measures of Central Tendency – Mean: Arithmetic mean (simple and weighted), Geometric mean, Harmonic mean, Median, Mode. Measures of Dispersion: Range, Inter-quartile deviation, mean deviation, standard deviation, Variance.		
2	**Index Number**	**8**	**10**
	Meaning and Types, Construction, uses and limitations of index numbers, Cost of Living Index Numbers. Consumer Price Index Numbers for Agricultural Labourers in India, Consumer Price Index Numbers for Industrial Workers in India (concept only)		
3	**Economic growth and development**	**10**	**25**
	Per Capita Income (PCI) as a measure of development, International comparison of PCI and role of Purchasing Power Parity (PPP). Human Development Index (HDI), Concept of Sustainable development.		
4	**Financial System and its functions**	**10**	**20**
	Formal and informal financial system; Components of a financial system and their interdependence, Relationship between financial system and economic growth		
5	**Basic features of Indian economy**	**12**	**20**
	Trend of national and per capita income, Sector-wise composition of GDP, Basic demographic features – age, sex composition, density, urbanization, Labour force and		

	Work force and Participation rate , Unemployment, Occupational Pattern, Demographic Dividend.		

Readings:

1. A.N. Agarwal: Indian Economy - Problems of Development and Planning, New Age International Publishers
2. B. V. Pathak: Indian Financial System, Pearson Education, Singapore.
3. Debraj Roy: Development Economics
4. Michael P.Todaro, Stephen C. Smith: Economic Development
5. Padmalochan Hazarika: Statistical Methods for Economics, Ashok book Stall
6. S.C. Gupta: Fundamentals of Statistics, Himalayas Publishing House, Seventh Edition
7. S.K.Misra, V K Puri: Economics of Development and Planning
8. V.K.Puri and S.K.Mishra: Indian Economy, Himalay Publishing House
9. William G. Cochran: Sampling Techniques, John Wiley, 2007.

Third Semester

Course Name: Intermediate Economics

Course Code: ECO030104

Existing Base Syllabus: UG CBCS Syllabus

Course Level: 200-299

Prerequisites: - NIL
Theory Credit: 04
Practical Credit: NIL
No. of Required Classes:
No. of Contact Classes: 60
No. of Non-contact Classes: NIL

Course Outcomes:

CO1: Identify basic micro and macroeconomic concepts.

CO2: Associate with the elementary exposure to International Economics.

CO3: Explain the behavior of individual economic agents and outcome of their decisions on the aggregated levels.

CO4: Analyse real economic issues like consumer behavior, producer behavior, money, inflation, employment, International Economics and basic theories.

CO5: Assess real life consumer behaviour on the basis of economic theories.

Unit No	Unit Content	No. of Classes	Marks
1	**Consumer's Behaviour**	**12**	**20**
	Consumer's Budget Constraints and Effects of Income and Price Changes on it, Consumer's Preference Ordering and Indifference Curves, Axioms of Preference and Properties of Indifference Curves: Consumer's Optimized Choice; Income and Substitution Effects, Derivation of Demand Theorem. Normal and Inferior Goods and the Giffen Paradox		
2	**Theory of Production and Cost**	**15**	**20**
	Total, Average & Marginal Product of a Single Variable Factor; Production Function with Two Variable Factors, Isoquant, Marginal Rate of Technical Substitution, Elasticity of Substitution; Homogeneity of Production Function, Returns to Scale, Least Cost Factor Combination, Expansion path, cost curves-Short and Long run		
3	**Firm's Revenue and Equilibrium**	**9**	**14**
	Total, Average and Marginal Revenue of a Firm under Perfect Competition and Monopoly, Equilibrium of a Profit Maximizing Firm under Perfect Competition and Monopoly. Need for Regulation of Monopoly		
4	**Money, Interest, Income**	**10**	**17**
	Definition and Functions of Money, Classical Theory of Full Employment Equilibrium, Quantity Theory of Money Keynes' Critique of the Classical Theory,		

	Liquidity Preference and the Rate of Interest, Keynesian Income Determination Model with Rate of Interest		
5	**Credit Creation, Money Supply and Inflation**	**8**	**14**
	Banking System and Credit Creation Process; Money Supply; Inflation: Demand-pulled and cost-pushed, Effects on production and distribution; Central Bank's Tools of Monetary Control		
6	**Elements of International Trade Theory**	**6**	**15**
	Autarky versus Trade, Absolute and Comparative cost, Gains from Trade		

Readings:

1. N C Ray, *Microeconomic Theory*, MacMillan
2. Dominick Salvatore, *Microeconomic Theory*, Schaum's Outline Series, McGraw Hill
3. Soumyen Sikdar, *Principles of Macroeconomics*, Oxford
4. Dominick Salvatore, *International Economics*,

Third Semester

Course Name: Indian Economy

Course Code: ECO030204

Existing Base Syllabus: UG CBCS Syllabus

Course Level: 300-399

Prerequisites: None

Theory Credit: 04

Practical Credit: NIL

No. of Required Classes:

No. of Contact Classes: 53

No. of Non-contact Classes: 07

Course outcome:

CO 1: Summarise the status of Indian economy in terms of development indicators since independence

CO 2: Analyse the various changes initiated in India's agriculture and the rural sector

CO 3: Examine the growth of India's manufacturing and service sector.

CO 4: Assess the reforms and the recent policy initiatives introduced in the Indian economy

CO 5: Appraise the role of the Indian economy in the global context

Unit No	Unit Content	No. of Classes	Marks
1	**Broad Trends and Compositions**	**10**	**20**
	State of the Indian Economy at the time of independence – Growth in GDP and per capita income and changes in sector-wise composition during 1951-80 - BOP crisis brewing in 1980s – market oriented economic reforms initiated in 1991 – Growth trends, sector-wise composition, poverty and inequality in the post reform period		
2	**Agriculture and the rural sector**	**13**	**25**
	Land reforms – Green Revolution – Agrarian crisis of 1990s Horticulture and livestock as new areas of growth – Role of PMGSY and MGNREGS in rural transformation - Challenges in the 21st century: GM crops, Climate smart agriculture and doubling of farmers' income – Reforms in agriculture		
3	**Manufacturing and Service Sectors**	**12**	**20**
	Slow growth of manufacturing and its impact on employment generation – Growing role of services in income and employment generation – Definition, composition and prospects of MSME		
4	**Key Initiatives and Reforms**	**08**	**15**
	GST – Direct Benefit Transfer – Jan Dhan Yojana and financial inclusion – Outstanding reforms: Land acquisition, Labour laws, and banking sector reforms – the challenge of formalizing of the economy		
5	**India in the Global Economy**	**10**	**20**
	Size of the Indian Economy in the global context - Trade openness in the post-reforms and post-WTO regime – trends in the trade-GDP ratio - Capital flows (FDI and FII) and their impact – BIMSTEC and India-ASEAN free trade initiatives		

Readings:

1. Arvind Panagariya (2010): *India the Emerging Giant*, OUP
2. Jagdish Bhagyawati and Arvind Panagariya (2015)*Why Growth Matters*, OUP
3. Abhijit Banerjee, Rajan, Raghuram Rajan, Gita Gopinath, Mihir S. Sharma (2019) *What the Economy Needs Now*, Juggernaut Books, New Delhi
4. Statistical Appendix of the Latest Economic Survey, Ministry of Finance, Government of India

Fourth Semester

Course Name: Public Finance

Course Code: ECO040104

Existing Base Syllabus: UG CBCS Syllabus

Course Level: 200-299

Prerequisites:	This course requires successful completion of first and second semester courses in Economics.
Theory Credit:	04
Practical Credit:	NIL
No. of Required Classes:	
No. of Contact Classes:	50
No. of Non-contact Classes:	10

Course Outcomes:

CO-1: Identify the concept of market failure and its implications for public policy.
CO-2: Illustrate the reasons for and consequences of public debt accumulation.
CO-3: Classify the role of budget in funding government activities and its impact on economic behavior.
CO-4:. Choose the objectives, instruments and outcomes of fiscal policy in different economic contexts.
CO-5: Assess the components of a government budget and their role in achieving economic stability and growth.

Unit No	Unit Content	No. of Classes	Marks
1	**Meaning, Scope and Nature**	**10**	**15**
	Public Financeand its nature. Objectives of Fiscal Intervention: Allocation, Distribution and Stabilization. Parameters for policy evaluation: *Equity, Efficiency, Paternalism*		
2	**Market Failure and Public Intervention**	**10**	**15**
	Public Goods and the Free Rider Problem. Externalities: inefficiencies and corrections, property rights, Coase theorem		
3	**Taxation**	**10**	**20**
	Principles of taxation: Benefit vs Ability. Shifting and Incidence of tax. Economic effects, dead weight loss and distortion. Efficiency and equity considerations.		
4	**Public Expenditure**	**15**	**20**
	Principles of Expenditure Analysis, Fixed Quantity Subsidy for Marketed goods: overconsumption and underconsumption. Excise Subsidy: Allocative and Distributive Effect. Public Investment and Social Cost-Benefit Analysis		
5	**Public Debt and Budgeting**	**10**	**15**
	Sources of Public Debt and its redemption. Burden of Public Debt. Strategies of Debt Management. Budgeting: Incremental vs Zero-based budgeting. Outcome Budget.		
6	**Fiscal Policy and Federal Finance**	**10**	**15**
	Objectives and Strategies, Compensatory fiscal policy, pump priming, functional finance.Balanced Budget Multiplier. Fiscal Federalism: Vertical and Horizontal Equity, Inter-governmental Transfers. Finance Commission of India.		

Readings:

1. Browning E K & Browning J M, Public Finance and the Price System, Pearson Education. Singapore.
2. Hyman D N, Public Finance: A Contemporary application of Theory to Policy, Thomson South Western.
3. Ulbrich H, Public Finance in Theory and Practice, Thompson South Western.
4.Mukherjee S, Ghose A & Nag N N, Analytical Public Finance. Public Economics-Public Choice-Public Policies, New Central Book Agency (P), Kolkata.
5. Musgrave & Musgrave., Public Finance in Theory and Practice, McGraw Hill, Singapore.

Fourth Semester

Course Name: Advanced Macroeconomics

Course Code: ECO040204

Existing Base Syllabus: UG CBCS Syllabus

Course Level: 200-299

Prerequisites: This course requires successful completion of Intermediate Economics course offered in the third semester

Theory Credit: 04

Practical Credit: NIL

No. of Required Classes:

No. of Contact Classes: 50

No. of Non-contact Classes: 10

Course Outcomes:

CO-1: Provide an outline of the domain of Macro Economics
CO-2: Describe basic ideas on macroeconomic indicators or variables.
CO-3: Discusses various alternative theories of output and employment determination in a closed economy in short-run, medium-run.
CO-4: Analyses long run dynamic issues like growth and technical progress.
CO-5: Develops theoretical understanding of issues related to an open economy.

Unit No	Unit Content	No. of Classes	Marks
1	**Consumption Function**	**15**	**20**
	Average and Marginal Propensity to Consume; Factors influencing Consumption spending; Keynesian consumption function; An Overview		

	of Post Keynesian theories of consumption: absolute income, relative income, permanent income & life cycle hypothesis.		
2	**Investment Function**	**15**	**20**
	Types of investment- Autonomous and Induced, residential investment and inventory investment; determinants of business fixed investment; marginal efficiency of capital, marginal efficiency of investment; Accelerator theory of Investment; Multiplier-Accelerator interaction.		
3	**Macroeconomic modeling**	**14**	**30**
	IS-LM model and policy analysis, Income determination in an open economy; Mundell-Fleming model; Exchange rate and its determination; Purchasing power parity; Demand-Supply and Balance of Payments theory.		
4	**Inflation, Unemployment and Expectations**	**08**	**15**
	Inflation-unemployment trade off and Phillips curve; Adaptive and Rational expectations; policy ineffectiveness debate.		
5	**Economic Growth**	**08**	**15**
	Harrod- Domar model; Solow model; Technological progress and elements of endogenous growth.		

Readings*:*

1. Debraj Ray, Development Economics, Oxford University Press, 2009
2. Dornbusch, Fischer and Startz, Macroeconomics, McGraw Hill, 11th edition, 2010
3. Dominick Salvatore, International Economics: Trade and Finance, John Wiley, 10th Edition 2011
4. N. Gregory Mankiw. Macroeconomics, Worth Publishers, 7th edition, 2010

5. Richard T. Froyen, Macroeconomics, Pearson Education Asia, 2nd edition, 2005
6. Thirlwall, A. P. "Growth and Development" Palgrave, 9th edition, 2011.

Fourth Semester

Course Name: Introductory Quantitative Techniques for Economics

Course Code: 040304

Existing Base Syllabus: UG CBCS Syllabus

Course Level: 200-299

Prerequisites: No
Theory Credit: 04
Practical Credit: NIL
No. of Required Classes:
No. of Contact Classes: 60
No. of Non-contact Classes: NIL

Course Outcomes:

CO-1: Select some important topics of Quantitative Techniques for beginners of Economics.

CO-2: Explain various preliminaries of mathematics like Differential Calculus, Integration of Functions, Single variable Optimization, Correlation Regression etc.

CO-3: Differentiate Differentiation from Integration, Correlation from Regression etc

CO-4: Interpret the results of correlation and regression coefficients.

CO-5: Design students' own model and interpret results.

Unit No	Unit Content	No. of Classes	Marks
1	**Preliminaries of Mathematics**	**8**	**10**
	Constants and Variables, Number system, Sets and set operations, Ordered pairs and Cartesian products, relations and functions, Types of functions: quadratic, polynomial, power, exponential, logarithmic, Limit and Continuity of a Function.		
2	**Differential Calculus**	**12**	**20**

	Differentiation of a function, Basic rules of differentiation, partial and total differentiation, second and higher order derivatives for single variable, economic applications of differentiation.		
3	**Integration of Functions**	**12**	**20**
	Meaning and significance of integration, basic rules of integration, significance of a constant after integration, applications: derivations of total functions (total cost, total revenue, consumption and saving functions) from marginal functions, Definite integral and its application-consumer's surplus and producer's surplus.		
4	**Single Variable Optimization**	**8**	**20**
	Local and global optima: geometric characterization, characterization using calculus: tests for maximization and minimization, applications: profit maximization, cost minimization, revenue maximization.		
5	**Correlation Analysis**	**10**	**15**
	Correlation, Coefficient of linear correlation, Properties of Correlation coefficient, Rank Correlation, Partial Correlation, Multiple Correlation.		
6	**Regression Analysis**	**10**	**15**
	Regression: Concept, Difference with Correlation Analysis, Properties, Estimation of regression line in a bivariate distribution-Least squares method, properties of regression coefficients.		

Readings:

1. K. Sydsaeter and P. Hammond, *Mathematics for Economic Analysis*, Pearson Educational Asia: Delhi, 2002
2. Chiang A.C. and K. Wainwright, *Fundamental Methods of Mathematical Economics*, McGraw Hill International Edition
3. Baruah S.N., *Basic Mathematics and its Economic Applications*, MacMillan
4. Jay L. Devore, Probability *and Statistics for Engineers,* Cengage Learning, 2010.
5. John E. Freund, *Mathematical Statistics*, Prentice Hall, 1992.
6. Richard J. Larsen and Morris L. Marx, *An Introduction to Mathematical Statistics and its Applications,* Prentice Hall, 2011.
7. S.C Gupta. Fundamentals of Statistics

Fourth Semester

Course Name: Advanced Microeconomics

Course Code:040404

Existing Base Syllabus: UG CBCS Syllabus

Course Level: 200-299

Prerequisites: No
Theory Credit: 04
Practical Credit: NIL
No. of Required Classes:
No. of Contact Classes: 60
No. of Non-contact Classes: NIL

Course Outcomes:

CO-1: Apply game theory to analyze market decisions.

CO-2: Analyze the implications of public policy on labour markets.

CO-3: Differentiate between forms of production functions such as Cobb-Douglas, CES, and Fixed coefficient type, and analyze their implications on total and partial factor productivity.

CO-4: Compare partial and general equilibrium approaches.

CO-5: Assess the criteria for social welfare optimization.

Unit No	Unit Content	No. of Classes	Marks
1	**Input Markets**	**20**	**10**
	Labour and land markets - basic concepts (derived demand, productivity of an input, marginal productivity of labour, marginal revenue product); demand for labour; input demand curves; shifts in input demand curves; competitive labour markets; and labour markets and public policy. Factors share & Technical progress- Backward bending supply curve of Labor.		
2	**Theory of Production and Cost**	**15**	**10**

	Forms of Production Function; Cobb-Douglas, CES and Fixed coefficient Type – the Ideas of Partial and Total Factor Productivity– Derivation of Cost Function from Production Function – Multi-product Firm: production Efficiency Locus, Production Possibility Frontier.		
3	**Consumer Theory and Information Economics**	**20**	**10**
	A review of Indifference Curve, Violation of premises of Indifference curve approach, Revealed Preference Theory. Inter-temporal choice, Choice under risk-Expected Return, variability and Expected utility hypothesis- Asymmetric information- Adverse Selection and Moral Hazard		
4	**Market Structure and Game Theory**	**25**	**10**
	Monopoly, Pricing with Market Power; Degree of Monopoly, Price Discrimination- Different Degrees; Multi-plant Monopoly. Monopolistic competition: Product Differentiation, Perceived and Proportionate Demand Curves, Price-Output Determination. Oligopoly and Game Theory (Two Person Zero Sum Game, Basic ideas and examples of non-zero-sum games, Prisoner's Dilemma), Applications of Game Theory in Oligopolistic Markets (Cournot Equilibrium).		
5	**General Equilibrium & Welfare Economics**	**20**	**10**
	Partial versus General Equilibrium Approaches- Walrasian General Equilibrium System. Pareto optimality, Kaldor-Hicks compensation criteria, Social Welfare Function, Fundamental Theorems of Welfare Economics, Arrow's Impossibility Theorem.		

Readings:

1. Dominick Salvatore,Schaum's Outline of Microeconomics, McGraw-Hill Education
2. G.S. Maddala and Ellen Miller, Micro Economic Theory and Application, Tata McGraw Hill.
3. Koutsoyiannis. A, Modern Micro-Economics, ELBS/Macmillan.
4. Pindyck, R. &Rubinfield, D.L., " Microeconomics", Pearson
5. C. Snyder and W. Nicholson, Fundamentals of Microeconomics, Cengage Learning (India).
6. Anindya Sen, Microeconomics-Theory and Application, Oxford University Press.

Fifth Semester

Course Name: Development Economics

Course Code: 050104

Existing Base Syllabus: UG CBCS Syllabus

Course Level: 300-399

Prerequisites: None

Theory Credit: 04

Practical Credit: NIL

No. of Required Classes:

No. of Contact Classes: 50

No. of Non-contact Classes: 10

Course Outcomes:

CO 1: Interpret the various development strategies followed by different societies of the world.

CO 2: Examine the process of development in different parts of the world.

CO 3: Relate poverty, inequality and environment to the process of development.

CO 4: Compare and contrast the alternate theories of growth and development.

CO 5: Measure development using various indices to assess development conditions.

Unit No	Unit Content	No. of Classes	Marks
1	**Concepts of Development**	**11**	**20**
	Measurement of development: Traditional measure of development, HDI as a measure of development, Gender Related Development Index. Structural Change and Economic Development. Sustainable Development Goals, Climate Change Challenges and Global Coordination Initiatives.		

2	**Poverty, Inequality and Development**	**12**	**20**
	Poverty - Conceptual Issues, Its Measurement, Poverty Trap - Definition, Causes and Economic Implications. Inequality - Conceptual Issues, Its Axioms and Measurement, Connections between Inequality and Development		
3	**Classical Development Theories**	**12**	**20**
	Theories of Evolution of a Capitalist Economy- Classical, Marx, Schumpeter. Theories of Persistence of Underdevelopment: Vicious Circle, Rostow's Stages of Growth		
4	**Strategies of Development**	**10**	**15**
	Big Push Theory, Balanced and unbalanced Growth Theory. Leibenstein Critical Minimum Theory		
5	**Dualistic Pattern of Development**	**15**	**25**
	Unlimited Supply of Labour and the Dual Economy - Models of Arthur Lewis and Fei-Renis, Rural-Urban Migration: The Harris–Todaro Model, Core-Periphery Models - The Process of Cumulative Causation: Myrdal, Neo-Colonial Dependence Model; Dependency School of Development		

Readings:

1. Barro & Salai-Martin, "Economic Growth", Prentice Hall of India.
2. Basu, K., "Analytical Development Economics:", OUP.
3. Meier, G.M., "Leading Issues in Economic Development", OUP.
4. Roy, D., "Development Economics", OUP.
5. Thirlwall, A. P. "Growth and Development" Palgrave
6. Todaro, M.P., "Development Economics", Pearson.
7. UNDP, "Human Development Reports", OUP.
8. World Bank, "World Development Reports", OUP

Fifth Semester

Course Name: International Economics

Course Code: ECO050204

Existing Base Syllabus: UG CBCS Syllabus

Course Level: 300-399

Prerequisites: Preliminary knowledge on international Economics as outlined in 3rd semester course on Intermediate Economics.

Theory Credit: 04

Practical Credit: NIL

No. of Required Classes:

No. of Contact Classes: 60

No. of Non-contact Classes: NIL

Course Outcomes:

CO1: Describe economic relationships among countries in terms of both trade and monetary issues.

CO2: Explain the composition, direction and consequences of international trade.

CO3: Analize the determinants and effects of various trade policies.

CO4: Assess the advances in trade theories over the years, trade policies as well as international monetary systems.

CO5: Explain real-world examples and case studies related to international trade.

Unit No	Unit Content	No. of Classes	Marks
1	**Evolution of International Trade Theories**	15	25
	The Ricardian theory- comparative advantage, Heckscher-Ohlin model, Factor price equalisation- Absolute and Relative, specific factors model, Empirical testing of H-O model: Leontief Paradox, factor-intensity reversal.		
2	**Advances in Trade Theories**	13	20
	International trade in the context of economies of scale and imperfect competition, technological gap model of Posner and product cycle theory of Vernon; multinational enterprises and international trade.		
3	**Trade Policy**	12	25
	Instruments of trade policy- tariff and quota- partial equilibrium analysis; political economy of trade policy- free trade vs. protection; controversies in trade policy, fixed versus flexible exchange rates; system of managed floating exchange rate.		

4	**International Economic Integration**	10	15
	Importance and forms of economic integration; costs of economic integration; Theories of Customs Union- partial equilibrium analysis.		
5	**International Monetary System**	10	15
	International monetary systems-definition, properties of a good international monetary system, Evolution of international monetary system from past to present; financial globalization and historical financial crises.		

Readings:

1. Paul Krugman, Maurice Obstfeld, and Marc Melitz, *International Economics: Theory and Policy*, Addison-Wesley (Pearson India Education Services), 10th edition, 2019.
2. Dominick Salvatore, *International Economics: Trade and Finance*, John Wiley International Student Edition, 10th edition, 2011.
3. Bo Sodersten and Geoffrey Reed: International Economics, Macmillan, 3rd edition, 1994.
4. H G Mannur, *International Economics: Theory and Practice*, Vikash Publishing House.

Fifth Semester

Course Name: Intermediate Quantitative Techniques for Economics

Course Code: 050304

Existing Base Syllabus: UG CBCS Syllabus

Course Level: 300-399

Prerequisites: Preliminary knowledge on Mathematical Economics as outlined in 4th semester course on Introductory Quantitative Techniques for Economics.

Theory Credit: 04

Practical Credit: NIL

No. of Required Classes:

No. of Contact Classes: 60

No. of Non-contact Classes: NIL

Course Outcomes:

CO-1: Identify topics of Quantitative Techniques for students of Economics at intermediate level.

CO-2: Compute solutions of simple market model, national income model and other simultaneous equations by using matrix.

CO-3: Explain some basic concepts of functions and their applications.

CO-4: Measure trend value by using Moving Average method and least square.

CO-5: Integrate the knowledge of quantitative methods in interpreting economic issues.

Unit No	Unit Content	No. of Classes	Marks
1	**Linear Algebra**	**10**	**25**
	Matrix: various types of matrices, vector and vector space-concept, matrix operations: addition, subtraction and multiplication; rank, norm and trace of a matrix, introduction to the concept of determinants and their properties, non-singularity of matrix, matrix inversion, solutions of simultaneous equations by using matrix inversion and Cramer's rule, simple market model and national income model.		
2	**Functions of Real Variables**	**06**	**10**
	Homogeneous and homothetic functions: concepts, Differentiable functions: concepts, Implicit Function Theorem and applications; convex, quasi-convex and concave functions.		
3	**Multi-variable Optimization**	**12**	**20**
	Unconstrained optimization: geometric characterization, characterization using calculus and applications: price discrimination and multi-plant firm; constrained optimization with equality constraints, Lagrange multiplier, applications: consumer's equilibrium and producer's equilibrium.		
4	**Elementary Probability Theory**	**12**	**15**
	Sample spaces and events; probability axioms and properties; addition and multiplication theorem of probability, counting techniques; conditional probability and Bayes' rule (concept only); Defining random variables; expected values of random variables.		
5	**Theoretical distributions**	**10**	**15**

	Functions of random variables (probability mass function and probability density function), Commonly used discrete and continuous distributions (Uniform, Binomial, Poisson and Normal).		
6	**Introduction to Time Series**	**10**	**15**
	Time Series Analysis-Concept and Components; Measurement of Trend		

Readings:

1. K. Sydsaeter and P. Hammond, *Mathematics for Economic Analysis*, Pearson Educational Asia: Delhi, 2002
2. Chiang A.C. and K. Wainwright, *Fundamental Methods of Mathematical Economics*, McGraw Hill International Edition
3. Baruah S.N., *Basic Mathematics and its Economic Applications*, MacMillan
4. Jay L. Devore, Probability *and Statistics for Engineers,* Cengage Learning, 2010.
5. John E. Freund, *Mathematical Statistics*, Prentice Hall, 1992.
6. Richard J. Larsen and Morris L. Marx, *An Introduction to Mathematical Statistics and its Applications,* Prentice Hall, 2011.
7. S. C. Gupta and V.K. Kapoor. Fundamentals of Applied Statistics
8. S. C. Gupta and V.K. Kapoor. Fundamentals of Mathematical Statistics

Sixth Semester

Course Name: Assam Economy

Course Code: 060104

Existing Base Syllabus: UG CBCS Syllabus

Course Level: 300-399

Prerequisites: No
Theory Credit: 04
Practical Credit: NIL
No. of Required Classes:

No. of Contact Classes: 60
No. of Non-contact Classes: NIL

Course outcome:

CO1: Describe the status of Assam economy in some development indicators since independence

CO2: Discuss the linkage between human capital formation and different sectors of an economy.

CO3: Analyse the relevance of policies and its effects on different sectors in the context of the economy of Assam.

CO4: Justify the need for the state's relationship with her neighbouring states.

CO5: Prescribe policies for the overall upgrade of the state economy.

Unit No	Unit Content	No. of Classes	Marks
1	**The Economy under Colonial Rule (1837 -1947)**	**10**	**15**
	Imposition of Land Revenue and Its Impact, Prohibition of Opium Production and State Takeover of Opium Trade, Inflow of Colonial Investment in Plantation, Mining and Other Industries. Development of Water Transport and Railways, In-migration of Population and its Impact on the Economy: Shock of Partition and its Impact		
2	**Growth and Sectoral Composition in the Post-Independence Period**	**15**	**25**
	Population growth trends before and after 1971, Trends in Demographic Parameters: Population Density, Sex Ratio, Life Expectancy, Fertility Rate and Infant Mortality Rate – Work Force and Labour Force Participation, Occupational Distribution. Trends and Sector-wise Composition of GSDP, Trend in Per Capita NSDP in comparison with trends in all-India Per Capita Income Trends in Other Indicators of Development in Comparison with all-India standard: Life expectancy, Literacy, Enrolment and Forest Cover		
3	**Sectoral Status and Prospects**:	**20**	**35**

	Infrastructure: Status of Road, Rail and Air Connectivity within and out of the State; Potentials and Limitation of Waterways Development; Status of Power and Telecommunication **Agriculture:** Land Holding Patterns, Land Tenure and Land Reforms, Cropping Pattern, Production and Productivity of Principal Crop –Diversification of the Rural Economy to Horticulture, Fishery, Livestock and Non-farm activities – Prospects and Challenges of the Sector. **Industry:** Tea Industry and Role of Small Tea Growers, The Future of Hydrocarbon Industry. Traditional Handloom Handicraft and their Prospect; **Service Sector**: Size and Composition. Tourism Resources and their Economic Potentials: Policies for sustainable realization		
4	**State Finances**:	**9**	**15**
	Trends and composition of State Government receipts before and after GST regime. Composition of Public Expenditure and its implications. Sustainability of Government Borrowing. Fiscal Devolution to Local Bodies (Panchayats, Municipalities and Autonomous Councils)		
5	**Assam Economy in its Neighborhood**	**6**	**10**
	Mutual inter-dependence with neighboring States Stakes of Assam in the Act East Policy		

Readings:

1. Atul Goswami "Assam's Industrial Development: Urgency of New Direction", Economic and Political Weekly 1981
2. Department of Economics, Gauhati University, “Identity Aspirations, Developmental Backlogs and Governance Issues in Northeast India” Maliyata Offset Press, Mirza, 2016
3. Directorate of Economics and Statistics, Government of Assam, “Economic Survey Assam” [recent issues] https://des.assam.gov.in/information-services/economic-survey-assam
4. Directorate of Economics and Statistics, Government of Assam, “Statistical Handbook of Assam” 2018 or later addition
5. Guha, Amalendu, Planter’s Raj to Swaraj, Second Edition (paperback)

6. India Brand Equity Foundation “About Assam: Tourism, Industries In Assam, Agriculture, Economy & Geography”, June 2020, https://www.ibef.org/states/assam.aspx

7. J B Ganguli, "Economic Conditions and Change in North-East India" in A.P. Singha (ed) Changing North East India, Ludhiana: Gagan Publishers, 1986

8. J N Sarma, “Problems of Economic Development in Assam" Economic and Political Weekly, Vol. 1, No. 7, Pp. 281+283-286.

9. Planning and Development Department, Government of Assam “Assam Human Development Report 2014”

Sixth Semester

Course Name: Basics of Econometrics

Course Code: 060204

Existing Base Syllabus: UG CBCS Syllabus

Course Level: 300-399

Prerequisites:	No
Theory Credit:	04
Practical Credit:	NIL
No. of Required Classes:	
No. of Contact Classes:	52
No. of Non-contact Classes:	08

Course Outcomes:

CO-1: Identify sources, consequences, and detection methods of violations of classical assumptions in regression analysis.

CO-2: Estimate parameters in multiple linear regression models and evaluate the properties of Ordinary Least Squares (OLS) estimators

CO-3: Demonstrate proficiency in utilizing MS Excel for econometric applications and solutions, including data analysis and interpretation of econometric models.

CO-4: Analyze the properties and applications of statistical distributions

CO-5: Utilize simple linear regression models for forecasting purposes.

Unit No	Unit Content	No. of Classes	Marks
1	**Statistical Background**	**10**	**15**
	Normal distribution, chi-square, t- distribution, and F-distribution; estimation of parameters, properties of estimators, Statistical Inferences, Hypothesis testing, Type I and Type II errors, power of a test; Level of Significance, Confidence Interval.		
2	**Simple Linear Regression Model**	**12**	**25**
	Two Variable Case, Estimation of model by method of ordinary least squares, properties of estimators, Gauss-Markov theorem, BLUE, goodness of fit; tests of hypotheses, scaling and units of measurement, confidence intervals, forecasting.		
3	**Multiple Linear Regression Model**	**10**	**15**
	Estimation of parameters, properties of OLS estimators, goodness of fit, $R^2$and adjusted R^2, partial regression coefficients, testing hypotheses – individual and joint, functional forms of regression models, qualitative (dummy) independent variables.		
4	**Violations of Classical Assumptions**: **(Marks: 15) (Class: 10)**	**10**	**15**
	Sources, Consequences, Detection and Remedies of Multicollinearity, heteroscedasticity, serial correlation		
5	**Specification Analysis: (Marks: 10) (Class: 10)**	**10**	**15**
	Omission of a relevant variable, inclusion of irrelevant variable, tests of specification errors		

Readings:

1. R P Hooda, Statistics for Business and Economics, Vikas Publishing

2. D. N. Gujarati and D.C. Porter, Essentials of Econometrics, McGraw Hill, 4th edition, International Edition, 2009.

3. Christopher Dougherty, Introduction to Econometrics, Oxford University Press,4th edition, Indian edition, 2011.

4. Wooldridge J.M., Introductory Econometrics: A Modern Approach, Cengage Learning India Pvt. Ltd, 2014

Sixth Semester

Course Name: Fundamentals of Financial Analysis

Course Code: 060304

Existing Base Syllabus: UG CBCS Syllabus

Course Level: 300-399

Prerequisites: None
Theory Credit: 04
Practical Credit: NIL
No. of Required Classes:
No. of Contact Classes: 45
No. of Non-contact Classes: 15

Course Outcome:

CO-1: Describe the structure and functions of the money market.
CO-2: Explain the role of the capital market and indicate how the institutions and instruments in it operate.
CO-3: Compute the valuation of debt and equity instruments.
CO-4: Develop skills to analyse financial assets.
CO-5: Determine risk and returns of an asset as well as of a portfolio

Unit No	Unit Content	No. of Classes	Marks
1	**Financial Markets**	**15**	**25**
	Money Market: Structure and functions, Instruments in the money market. Liquidity Management Instruments in the Money Market. The Capital Market: Nature and functions, Primary Capital Market: Instruments of resource mobilization- *Public Issues: IPO & FPO, Right Issues, and Private Placement.* Pricing of new issues. Secondary Capital Market: Trading & Settlement. Stock Market Index. Mutual Fund and its functional classification.		
2	**Valuation of Financial Assets**	**12**	**20**

	The law of One Price and Arbitrage, The valuation of debt instruments: Pure Discount Bonds. Coupon Bonds, Current Yield and Yield to Maturity, Valuing stock: Value of a Common Stock and the Dividend Discount Model: Zero Growth and Constant Growth.		
3	**Financial Analysis**	**12**	**20**
	Financial Ratios: Liquidity Ratios, Leverage Ratios, Turnover Ratios, Profitability Ratios, Valuation Ratios. Dupont Analysis, Relationships, Interpretations and Analysis		
4	**Risk and Return**	**11**	**20**
	Risk and Return of an Asset and a Portfolio. Measurement of Market Risk. Beta of a stock. The Risk Management Process. Dimensions of Risk Transfer.		
5	**The Derivative Market**	**10**	**15**
	Nature of the Derivative Market, Traders and Instruments in a derivative market, Trading Strategies: Hedging, Speculation for Arbitrage Strategies.		

References:

1. Alexander G J, Sharpe W F & Bailey J V. ***Fundamentals of Investments,*** Pearson Education
2. Bodie Z, Merton R. C. &Cleeton D. L. ***Financial Economics***. Pearson/ Prentice Hall.
3. Madura J. ***Financial Institutions and Markets***, Thomson South Western.
4. Pathak B. V. ***Indian Financial System***, Pearson Education, Singapore.
5. Prasanna Chandra.**Fundamentals of Financial Management**. McGraw Hill Education
6. Rustagi, R.P. **Fundamentals of Financial Management**. Taxmann Publication Pvt. Ltd.

Sixth Semester

Course Name: Environmental Economics

Course Code: 060404

Existing Base Syllabus: UG CBCS Syllabus

Course Level: 300-399

Prerequisites: None

Theory Credit: 04
Practical Credit: NIL
No. of Required Classes:
No. of Contact Classes: 55
No. of Non-contact Classes: 05

Course Outcome:

CO-1: Draw a comprehensive knowledge and understanding of the issues related to environment and economy.

CO-2: Indicate the issues related to market failure of environmental goods and the instruments which can prevent the damages of market failure of environmental goods.

CO-3: Differentiate environmental policies to reduce anthropogenic effect on environment.

CO-4: Explain how an economy should use the natural resources in an optimum way, such that an economy can take up the path of sustainable development.

CO-5: Make aware of global environmental issues.

Unit No	Unit Content	No. of Classes	Marks
1	**Introduction**	**20**	**10**
	Basic concepts: Environment, Ecology, Economy and the ecosystem. Definition and scope of Environmental economics, why study environmental economics. Interaction between the environment and the economy, environmental economics and ecological economics, Environmental economics and resource economics.		
2	**Market Failure in allocation of Environmental resources**	**20**	**10**
	Externality and its types; Market Failure: Meaning, Causes of market failure; Environment as a public good, Solutions to market failure: Government Intervention; Common Property Resources and its management.		
3	**The Design and Implementation of Environmental Policy**	**20**	**15**
	Environmental Policies: Overview; Conventional Instruments: Command and Control (CAC) approach; Economic Instruments of Environmental Policies: Pigovian taxes and effluent fees, tradable permits and Liability rules. Monitoring and Enforcement: Meaning, Penalties, Cost of abatement.		
4	**Sustainable Development:**	**20**	**10**

	Approaches to Sustainable Development: weak sustainability, strong sustainability, Safe minimum standard approach, ecological perspective and social perspective, Rules and indicators of Sustainable Development; Green Accounting (concept only)		
5	**International Environmental Problems and Initiatives:** Transboundary pollution (Problems of International Externalities), Economics of Climate change and Variability: Causes and Consequence; Inter linkages and trade off between Environment and Development. Environmental Kuznet Curve. Trade and environment: pollution haven hypothesis. Global Intervention for Sustainable Development	**20**	**10**

Readings:

1. Charles Kolstad, Intermediate Environmental Economics, Oxford University Press,
2. Bhattacharyya R, Environmental Economics, Oxford University Press.
3. Nick Hanley, Jason F. Shogren and Ben White, Introduction to Environmental Economics,Oxford University Press.

4. Robert N. Stavins (ed.), Economics of the Environment: Selected Readings, W.W. Norton, 5th edition, 2005.
5. Roger Perman, Yue Ma, James Mc Gilvray and Michael Common, Natural Resource and Environmental Economics, Pearson Education/Addison Wesley, 3rd edition, 2003.
6. Maureen L. Cropper and Wallace E. Oates, 1992, ―Environmental Economics: ASurvey, ‖ Journal of Economic Literature, Volume 30:675-740.
7. Subhashini Muthukrishnan, Economics of Environment, PHI Learning Private Limited, 2nd edition, 2015.

First Semester: FYIMP
SEC: Code
Credit: 3:: Theory: 0, Practical :3 credits
Marks: 75 (Int: 20+Prac: 25 + Final:30)
Course name: Basics of Data

Course Objective:

This course will give an idea to students about the role and importance of data in the study of Economics. Students can learn about different types of data and the ways of data collection in economic studies.

Course Outcomes:

- To describe different types of data.
- To give idea why data are important in economic analysis.
- To discuss the ways of collection of data.

Unit	Unit content	Class	Marks
1	Data, importance of data in economic analysis, types of data – primary and secondary, Sources of data, census and sample survey, Sources of secondary data: NSSO, NFHS, CMIE, RBI, WB	17	30
2	Data collection techniques, primary data collection tools, design of schedule, organization of data - sorting and coding, data entry	8	20
3	Student will design a schedule and collect data on an economic issue and submit systematically to the instructor	5	25

Readings:

1. S.C. Gupta: Fundamentals of Statistics, Himalayas Publishing House, Seventh Edition

2. Websites of NSSO, NFHS, CMIE, RBI, and WB

Second Semester: FYIMP
SEC: Code 0200103

Credit: 3:: Theory: 0, Practical :3 credits
Marks: 75 (Int: 20+Prac: 25 + Final:30)
Course name: Data Analysis

Course Objective:

This course will give an idea to students about the use of computer for presenting and summarizing data. Students can learn appropriate use of diagrammatical and tabular presentation of information. The use of computer and other statistical software in computing basic statistical tools and other relevant statistical technique will also be covered in this course. The students will have to compute the different statistical tools taking data from real life examples.

Course Outcomes:

- To describe the use of computer for presenting and summarizing data.
- Students can learn appropriate use of diagrammatical and tabular presentation of information.
- The use of computer and other statistical software in computing basic statistical tools and other relevant statistical technique is also covered in this course.
- There will be hands-on training for each student with individual computer.

Unit	**Unit content**	**Class**	**Marks**
1	Presentation of data Diagrammatic Presentation- One dimensional –single, subdivided, multiple deviation; Two dimensional- histogram, pie diagram; Three dimensional- rectangular, cube; Pictograms and cartograms, scatter, line and radar diagrams; Tabular Presentation -Single; Double, Multiple	15	20
2	Overview of Basic statistics Frequency, Summation, maximum, Minimum, Mean, Median, Mode, standard deviation, skewness	10	20
3	Statistical relations Covariance; correlation- Bivariate, Partial, Rank, Correlation matrix.	20	25

1st semester: VAC
Environmental Studies
Total marks: 50
Course level:100-199
No. of Credits: 2No. of hours: 30

Course Objective:

The course objective is to develop an understanding of the basic concepts of environmental studies. This course will help to know the environment around us. It also gives an idea of various laws to protect environment.

Course Outcome:

- After going through this course students can visualize the importance of environment for human mankind. This course will help to make an understanding of the various concepts which are frequently used by us. This course also enable students to know the problems of a particular environmental event through case studies and also help them to go through the various available laws that can minimize the environmental problems.

Unit1: Introduction to Environmental Studies **5 lectures**

- Multidisciplinary nature of environmental studies;
- Scope and importance;
- Basic concepts: Renewable resources, no renewable resources, Common Property resources, Tragedy of commons, Climate change, global warming
- Concept of sustainable development

Unit 2: Ecosystems 10 lectures

- What is an ecosystem? Difference between ecology and ecosystem. Structure and function of ecosystem: Energy flow in an ecosystem: food chains, food web and ecological succession.
- Case studies on any one of the following
  a)Forest ecosystem
  b)Grassland ecosystem
  c)Aquatic ecosystems (ponds, streams, lakes, rivers)
  d)Mountain ecosystem

Unit 5: Environmental Pollution and laws **15 lectures**

- Environmental pollution: types, causes, effects and controls; Air, water, soil and noise pollution
- Solid waste management: Control measures of urban and industrial waste.

- Environment Laws: Environment Protection Act; Air (Prevention & Control of Pollution) Act; Water (Prevention and control of pollution) Act; Wildlife Protection Act; Forest Conservation Act. International agreements, policies and treaties

Suggested Readings:

1. Bharucha Erach : Text book on Environmental Studies, UGC, New Delhi
2. Carson, R 2002. Silent Spring. Houghton Mifflin Harcourt.
3. De A.K.: Environmental Chemistry, Wiley Eastern Ltd.
4. Kaushik Anubha and C.P.Kaushik : Perspective in Environmental Studies, New Age International
5. Rajagopalan, R. (2018). Environmental Studies. (3rd Edition) Oxford University Press
6. S. C. Santra (2011): Environmental Science, New Central Book Agency

Second Semester:VAC

Course Name: Environmental Assessment and Education

Course level:100-199

No. of contact classes: 30 (Theory 26 hours + Practical 4hours)

Credits: 2 credits

Course objectives:

This course will help students to get an idea about the biodiversity and its conservation. By going through the biodiversity losses which is mostly by human activities, the students could learn the importance of the conservation of biodiversity. Unit 2 of this course will give an overall idea of the basic environmental assessment practices and its role in environmental management. This course also educates students about environmental ethics and the role of religious and cultural norms in environmental conservation.

Learning outcomes:

- Expose students to the real - life world, natural and social, in which they live
- Enable students to analyse, evaluate, and draw inference about problems
- Help students to understand the ethical issues related to environment

Theory

Unit 1: Biodiversity and Conservation : (10 lectures: 16 marks)

Levels of biological diversity: genetic, species and ecosystem diversity; Biogeographic zones of India; Biodiversity patterns and global biodiversity hot spots; India as a mega-biodiversity nation; Endangered and endemic species of India; Threats to biodiversity: Habitat loss, poaching of wildlife, man- wildlife conflicts, biological invasions; Conservation of biodiversity: In-situ and Ex situ conservation of biodiversity; Ecosystem and diversity services: Ecological, economic, social, ethical, aesthetic and informational value.

Unit 2: Environmental Impact Assessment: (8 lecture: 12 marks)

Introduction to Environmental Impact Assessment; Environmental Impact Statement (EIS) and Environmental Management Plan (EMP). Strategic Environmental Assessment (SEA); EIA Guidelines: notification of the Government of India 2006; Impact Assessment Methodologies.

Unit 3: Environmental ethics: (8 lectures: 10 marks)

Concept of Sustainable Development, Natural resources, and their assessment; Environmental education, and awareness. Environmental ethics: Role of Indian and other religions and cultures in environmental conservation.

Practical: (4 lectures:12 marks)
Each student will prepare a project about the various religious and cultural norms that are used in their locality for environmental conservation

Suggested Readings:

Botkin, Daniel B. and Keller, Edward A. Environmental Science: Earth as a Living Planet. 6th ed. John Wiley & Sons, USA. 2007
Gaston, K.J. and Spicer, J.I. Biodiversity: An Introduction. Blackwell, UK.1998
Enger, E.D. and Smith, B.F. Environmental Science: A study of Interrelationships. 11th ed. McGraw Hill Inc., USA. 2006.
Ramakrishnan, P.S. Ecology and Sustainable Development. National Book Trust of India, Delhi, India. 2001.
Kulkarni, V. and Ramachandra, T.V. Environmental Management. Capitol Pub. Co., New Delhi. 2006.
Glasson, J. Therivel, R. and Chadwick, A. Introduction to Environmental Impact Assessment. Routledge, London. 2006.
V.S. Kulkarni, S.N. Kaul and R.K. Trivedy. A Handbook of Environmental Impact Assessment. Scientific Publishers.
Sustainable Development report. https://www.sustainabledevelopment.report/