

Rayat Shikshan Sanstha's  
**YASHAVANTRAO CHAVAN INSTITUTE OF  
SCIENCE, SATARA**

**Lead College of  
Karmaveer Bhaurao Patil University, Satara**

**Syllabus For**

**Bachelor of Science**

**Part - II**

**ECONOMICS**

**Semester III and IV**

**(Syllabus to be implemented from Academic Year 2024-25)  
(NEP-2020)**

### Structure of the Course (Level 5.0)

Class	Level	Sem	Major		Minor		VSC	SEC	AEC	VEC	CC	Total
			T	P	T	P						
B.Sc. II	5.0	III	4 (02 Theory Papers)	4 (02 Practical Papers)	2	2	2	2	4	2	---	22
		IV	4 (02 Theory Papers)	4 (02 Practical Papers)	2	2	2	2	4	---	2	22

VSC- Vocational Skill Courses, SEC- Skill Enhancement Courses, AEC- Ability Enhancement Courses, VEC- Value Education Courses, CC- Co-curricular Courses, T- Theory, P- Practical.

## Course Titles

### B.Sc. II Semester III

<b>Nature of the Course</b>	<b>Theory/ Practical</b>	<b>Course Code</b>	<b>Name of the Course</b>
Major	Theory	BECT 231	Indian Public Finance
		BECT 232	Agriculture Economics
	Practical	BECP 233	Major Practical III
Minor	Theory	BECT 234	Econometrics II
	Practical	BECP 235	Minor Practical III
VSC	Practical	BECP VSC 1	Financial Planning and Analysis I
SEC	Practical	BECP SEC 2	Behavioral Economics and Decision Making I
VEC	Practical	BECT VEC 2	Environmental Awareness for Economics

### B.Sc. II Semester IV

<b>Nature of the Course</b>	<b>Theory/ Practical</b>	<b>Course Code</b>	<b>Name of the Course</b>
Major	Theory	BECT 241	Principles and Practice of Co-operation
		BECT 242	International Economics
	Practical	BECP 243	Major Practical IV
Minor	Theory	BECT 244	Computer Applications in Economics II
	Practical	BECP 245	Minor Practical IV
VSC	Practical	BECP VSC 2	Financial Planning and Analysis II
SEC	Practical	BECP SEC 3	Behavioral Economics and Decision Making II

## B. Sc. II Semester III

### BECT 231: Indian Public Finance

**Course Objectives:** Student should be able to...

1. observe trends in tax and non-tax revenue of central government.
2. review central government expenditure on developmental matters.
3. study main sources of income of local organizations.
4. understand the nature of fiscal imbalance.

<b>Credits = 02</b>	<b>SEMESTER-III BECT 211: Indian Public Finance</b>	<b>No. of lectures per unit</b>
<b>UNIT I</b>	<b>Public Revenue</b>	<b>(07)</b>
	Instruments of Income and Indian Taxation, Income Trends Direct and Indirect Taxes in India over the last decade, Brief Overview of Pre-1991 Tax Reforms, Detailed overview of tax reforms after 1991, Changing burden of input tax, goods and services tax, agricultural tax system.	
<b>UNIT II</b>	<b>Public Expenditure and Public Debt</b>	<b>(08)</b>
	Trends in Central and State Government Public Expenditure in the Last Decade, Central Government Expenditure on Developmental Matters, Expenditure of Central Government on non-developmental matters, Development Expenditure of State Govt, Non-Developmental Expenditure of State Govt, Role of Public Expenditure in Economic Development, Internal and external trends in public debt over the last decade, Management of Public Debt.	
<b>UNIT III</b>	<b>Deficit Financing, Local Finance and Fiscal Policy</b>	<b>(08)</b>
	Deficit Financing Different concepts of deficit financing, Plan of measures to reduce fiscal deficit, Budgetary Fiscal Deficits of Central and State Governments, Analysis of Central and State Government Budgets for the last three years, Major sources of income for local bodies, Measures to improve local finance, financial crisis and financial reform, Fiscal Responsibility and Budgetary Management Act, 2003.	
<b>UNIT IV</b>	<b>Federal Finance</b>	<b>(07)</b>
	Constitutional Provisions-Role of Finance Commission in Federal Government System, Gadgil Sutra, Reports of 10th, 11th, 12th and 13th Finance Commissions, 14th Finance Commission Terms of Reference, Approach and Recommendations, Fiscal imbalance problem, vertical and horizontal imbalances.	

**Course Outcomes:** Student will be able to...

1. identify the components listed, such as public revenue, public expenditure, public debt, deficit financing, local finance, fiscal policy, and federal finance.
2. assess the titles of each element and their relevance to government finance.
3. apply knowledge of these components to analyze government financial systems or policies.
4. analyze the interrelationships between different components, such as how public revenue affects deficit financing or how federal finance differs from local finance.

**References:**

1. Chelliah, Raja J. Indian Public Finance. New Delhi: Allied Publishers, 1993.
2. Rao, M. Govinda, and Nirvikar Singh. Public Finance in Theory and Practice, New Delhi: Sage Publications, 2010.
3. Pathak, Bharti. Indian Financial System. Mumbai: Pearson Education India, 2018.
4. Bhatia, H.L. Public Finance in India, New Delhi: Vikas Publishing House, 2005.
5. Lekhi, R.K. Public Finance, New Delhi: Sterling Publishers, 2008.
6. Bird, Richard M., and François Vaillancourt. Public Finance in Developing Countries, Cheltenham, UK: Edward Elgar Publishing, 2008.

**B. Sc. II Semester III**  
**BECT 232: Agriculture Economics**

**Course Objectives:** Student should be able to...

1. learn fundamental economic concepts and theories and demonstrate how these apply specifically to agricultural contexts.
2. explore the structure and behavior of agricultural markets, including supply and demand dynamics, price determination, market equilibrium, and factors influencing market outcomes.
3. principles of farm management, including decision-making processes related to production, resource allocation, risk management, and maximizing farm profitability.
4. Investigate strategies for promoting agricultural development, including technological innovations, sustainable farming practices, rural development initiatives, and their economic implications.

Credits = 02	SEMESTER-III BECT 212: Agriculture Economics	No. of hours per unit
<b>UNIT-I</b>	<b>Agricultural Economics and Theories of Agricultural Development</b>	<b>(08)</b>
	Introduction to Agricultural Economics Nature and Scope of Agricultural Economics, Applicability of Agricultural Economics, Role and Importance of Agriculture in Economic Development Demand and Supply Behavior in Agriculture Elasticity of Demand, Supply Response, Study Approach Factors Influencing Supply Response, Theories of Agricultural Development Theories of Schulz, Mailer, Haimy and Rutan.	
<b>UNIT-II</b>	<b>Economics of Agricultural Production</b>	<b>(09)</b>
	Productivity Phases of production Adequate use of inputs Law of diminishing returns, Modern technology and changes in production, Resource Combination Time-to-Time Correlation, Substitutability of Factor of Production, Complementary Combination, Adequate Factor Combination, Expansion Path, Product Coherence: Product Correlation, Substantial Product Coherence, Agriculture and Industry, Characteristics of modern agricultural production, Utility/Importance of Agricultural Products.	
<b>UNIT-III</b>	<b>Economics of Farm Management</b>	<b>(04)</b>
	Agricultural Management, Principles of Agricultural Management, Management of agricultural resources.	
<b>UNIT-IV</b>	<b>Economics of Agricultural Risk Management</b>	<b>(09)</b>
	Nature of Uncertainty in Agriculture Price, Productivity and Technical Uncertainty, Ricks in Agriculture Types of hazards, climate, drought, production, price, financial, marketing and management strategies Risk Management Strategy Pradhan Mantri Fasal Bima Yojana, National Agricultural Bima Yojana, Crop Insurance as Risk Compensation Instrument, Crop Insurance, Weather Insurance, Farm Income Insurance, Livestock Insurance and Package Insurance, Transactions and Implementation of Farm Management Strategies Case Studies.	

**Course Outcomes:** Student will be able to...

1. differentiate basic facts, concepts, and terminology related to agricultural economics and development theories.
2. demonstrate comprehension of economic theories and models as they apply to agriculture, including factors affecting production decisions, price determination, market equilibrium, and government interventions.
3. use economic tools and techniques to analyze real-world farming situations, such as assessing profitability, optimizing resource allocation, and evaluating investment opportunities.
4. evaluate the effectiveness of different risk management strategies, and identifying potential areas for improvement.

**References:**

1. Desai R.G., Agricultural Economics, Himalaya Publishing House, Mumbai 2nd Edition, 2001.
2. Sadhu A.N., Singh A., Fundamentals of Agricultural Economics 7 Himalaya Publishing House, Mumbai 11h revised edition, 2000.
3. Kavimandan V. Agricultural Economics, Mangesh Publications, Nagpur, Sixth Edition, 2012.
4. Desai and Bhalerao, Agricultural Economics and Agribusiness in India, Nirali Publications, Pune.
5. Memoria C.B. and Tripathi B.B., Agricultural Problems of India, Kitab Mahal Publishers, Allahabad, 25th Edition, 2003.

**B.Sc. Part-II SEMESTER III**  
**BECP 233: Major Practical III**

**Course Objective:** Student should be able to...

1. understand the principles and concepts of Indian public finance.
2. interpret various fiscal policies and their impacts on the Indian economy.
3. recognize the factors influencing agricultural markets and pricing mechanisms.
4. identify key elements of agricultural policy and its impact on farmers and consumers.

**Group A**

Sr. No.	Name of Practical	No. of hours per practical
1.	Historical Analysis of Indian Budgets	4
2.	Case Study: Impact of GST Implementation	4
3.	Budget Analysis Exercise	4
4.	Taxation Policy Simulation	4
5.	Government Expenditure Review	4
6.	Fiscal Sustainability Assessment	4
7.	Public Debt Management Simulation	4
8.	Tax Compliance Analysis	4
9.	State Budget Analysis	4
10.	Infrastructure Financing Case Study	4
11.	Fiscal Federalism Exercise	4
12.	Tax Policy Debate	4
13.	Public Goods Provision Exercise	4
14.	Economic Survey Analysis	4
15.	Policy Brief Writing	4

**Group B**

Sr. No.	Name of Practical	No. of hours per practical
1.	Historical perspectives, and major issues in agricultural economics.	4
2.	Supply and Demand Analysis in Agricultural Markets	4
3.	Market Structures and Price Determination	4
4.	Farm Management and Decision Making	4
5.	Agricultural Policy Analysis: Subsidies and Price Supports	4
6.	International Trade and Comparative Advantage in Agriculture	4
7.	Risk Management in Agriculture: Insurance and Hedging	4
8.	Economic Impact of Climate Change on Agriculture	4
9.	Technological Innovations and Agricultural Productivity	4



10.	Labor Economics in Agriculture: Migration and Employment	4
11.	Environmental Economics and Sustainable Agriculture	4
12.	Economic Analysis of Food Distribution and Food Security	4
13.	Case Study: Economic Challenges Facing Smallholder Farmers	4
14.	Policy Evaluation: Assessing the Effectiveness of Agricultural Programs	4
15.	Future Trends in Agricultural Economics: Opportunities and Challenges	4

**Course Outcomes:** Student will be able to...

1. apply fiscal policy tools to analyze and assess their impact on various sectors of the Indian economy.
2. evaluate the role of taxation and public expenditure in achieving economic growth, equity, and stability in India.
3. analyze the effects of subsidies, tariffs, quotas, and other trade policies on domestic and international agricultural markets, utilizing economic models and data analysis techniques.
4. develop comprehensive plans for optimizing resource allocation, adopting new technologies, and enhancing the competitiveness of agricultural enterprises.

**References:**

1. Chelliah, Raja J. Indian Public Finance. New Delhi: Allied Publishers, 1993.
2. Rao, M. Govinda, and Nirvikar Singh. Public Finance in Theory and Practice, New Delhi: Sage Publications, 2010.
3. Pathak, Bharti. Indian Financial System. Mumbai: Pearson Education India, 2018.
4. Bhatia, H.L. Public Finance in India, New Delhi: Vikas Publishing House, 2005.
5. Lekhi, R.K. Public Finance, New Delhi: Sterling Publishers, 2008.
6. Bird, Richard M., and François Vaillancourt. Public Finance in Developing Countries, Cheltenham, UK: Edward Elgar Publishing, 2008.
7. Desai R.G., Agricultural Economics, Himalaya Publishing House, Mumbai 2nd Edition, 2001.
8. Sadhu A.N., Singh A., Fundamentals of Agricultural Economics 7 Himalaya Publishing House, Mumbai 11h revised edition, 2000.
9. Kavimandan V. Agricultural Economics, Mangesh Publications, Nagpur, Sixth Edition, 2012.
10. Desai and Bhalerao, Agricultural Economics and Agribusiness in India, Nirali Publications, Pune.
11. Memoria C.B. and Tripathi B.B., Agricultural Problems of India, Kitab Mahal Publishers, Allahabad, 25th Edition, 2003.

**B. Sc. II Semester IV**  
**BECT 241: Principles and Practice of Co-operation**

**Course Objectives:** Student should be able to...

1. understand the main principles of cooperation.
2. study problems of cooperative housing societies in India can be studied.
3. learn functions of cooperative buying and selling societies in India will be noted.
4. acquire the knowledge of the contribution of cooperatives in economic development.

<b>Credits = 02</b>	<b>SEMESTER-IV BECT 241: Principles and Practice of Co-operation</b>	<b>No. of hours per unit</b>
<b>UNIT I</b>	<b>Co-operation Meaning and Principles of Co-operation</b>	<b>(07)</b>
	Meaning and characteristics of cooperation, Key principles of cooperation, Restated Principles of Co-operation/Manchester Principles, Importance of cooperation, Progress of Cooperation in the Post-Independence Period, Cooperative Credit Structure, Primary Agricultural Co-operative Credit Institutions, District Central Cooperative Bank, State Cooperative Bank, Long-Term Rural Credit Structure, Primary Land Development Bank, Central Land Development Bank.	
<b>UNIT II</b>	<b>Non-Agricultural Co-operative Societies in India</b>	<b>(08)</b>
	Cooperative consumer organizations, Cooperative Housing Societies in India, Labor Co-operative Societies in India, Industrial Co-operative Societies in India.	
<b>UNIT III</b>	<b>Agriculture Based Co-operative Societies</b>	<b>(08)</b>
	Agricultural Co-operative Buying and Selling Organizations, Dairy Co-operative Societies, Cooperative Sugar Factories, Practical application: Review of progress and problems of milk and sugar co-operative societies.	
<b>UNIT IV</b>	<b>Co-operative Societies in India</b>	<b>(07)</b>
	National Agricultural and Rural Development Bank, National Cooperative Development Corporation, National Agricultural Cooperative Purchase and Sale Corporation (NAFED), National Co-operative Union of India, Khadi Village Industries Commission (KUIC), Farmers Fertilizer Cooperative Union of India, Krishak Bharatiya Sangh Limited.	

**Course Outcomes:** Student will be able to...

1. identify facts about cooperative societies in India, such as their types and Principles.
2. explain the meaning and principles of cooperation, as well as the distinction between agricultural and non-agricultural cooperative societies.
3. demonstrate how cooperative principles are applied in different sectors, like agriculture and non-agriculture.
4. assess the effectiveness of cooperative societies in achieving their intended goals and serving their members.

**References:**

1. Mathur B. S., Co-operation in India, Sahitya Bhavan Publications and Distributors, Agra, 2001.
2. Madam G.R., Co-operative Movement in India, Mittal Publication, New Delhi, 2007.
3. Powar Netaji V. and Gaikwad Y.S., Edited Principles and Practice of Co-operation Center for Distance Education, Shivaji University, Kolhapur, 2012.
4. B. L. Mathur, Rural Development and Co-operation, RBSA Publishers, 2006.
5. T. N. Hajela, Principles, Problems and Practice and Cooperation, Ane Books Pvt. Ltd., 7<sup>th</sup> edition, 2010.

**B.Sc. II Semester IV**  
**BECT 242: International Economics**

**Course Objectives:** Student should be able to...

1. study international trade theory, including absolute cost theory of international trade, comparative production cost theory, tossing, international trade issues were clarified.
2. understand factors that determine the benefits from international trade can be explained.
3. get an explanation of free trade policy, its support as well as its counter points, protectionism policy, its support as well as its counter points in international trade.
4. understand the meaning, forms and benefits of economic integration can be explained.

<b>Credits = 02</b>	<b>SEMESTER-IV BECT 242: International Economics</b>	<b>No. of hours per unit</b>
<b>UNIT I</b>	<b>Principles of International Trade</b>	<b>(08)</b>
	Theory of International Trade-Absolute Cost Benefit Theory of International Trade-Comparative Production Cost Theory Tossing's Theory of International Trade, Hechter-Ohlin Theory of International Trade Leontief's Paradox-Kugman's Theory of Economic Geography, Role of dynamic factors in trade formation Change in tastes - Technological progress - Factor efficiency, Complementary Trading Theory Linder's theory-Irwin B. Availability Theory of Crevis.	
<b>UNIT II</b>	<b>Benefits of international trade and its measurement</b>	<b>(07)</b>
	Trade and economic growth, Determinants of Gains from International Trade, Measurement and Distribution of Gains from Trade, Terms of Trade - Concept, Determining Factors, Uses and Limitations, Theory of Reciprocal Demand, Inferior Perversion Hypothesis of the Terms of Trade.	
<b>UNIT III</b>	<b>Theory of Trade Interference</b>	<b>(07)</b>
	Free Trade and Protection Policy Issues Against Policy - Protectionism Issues Raised Support for Free Trade Policy - Support for Free Trade Protection Policy Against Protection Policy, Barriers to Trade - Duties or Zakat Barriers - Types of Duties or Zakat Effects of Duties or Zakat - Adequate Zakat - Effective protection rate, Post-Tariff Barriers - Quotas - Foreign Exchange Controls - Price Discrimination or Dumping - State Trading - Export Subsidies - Commodity Agreements - International Cartels	
<b>UNIT IV</b>	<b>Integration theory</b>	<b>(08)</b>
	Balance of Transactions: Meaning, Structure, Factors-Equilibrium Balance of Trade Adjustment by Change in Exchange Rate, Elasticity Approach, Marshall-Lerner Conditions, J Curve Effect, Absorption Approach, Balance of Trade	

Adjustment through Policy Change Conventional Approach, Monetarist Approach, Structuralist Approach Foreign Trade Multiplier-with and without effect, Economic Integration/Cooperation: Meaning, Forms and Benefits, Theory of Zakat Union, Regional Union, SAARC, ASEAN, European Union (EU) and Disequilibrium in Transactional Balance	
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**Course Outcomes:** Student will be able to...

1. explain the concept of comparative advantage and its role in determining patterns of trade between nations.
2. analyze the various benefits of international trade, including economies of scale, specialization, and increased consumer choice.
3. apply economic models such as the partial equilibrium analysis to analyze the effects of trade barriers on domestic and international markets.
4. create strategies for maximizing the benefits and minimizing the costs of regional integration for participating countries.

**References:**

1. Mithani, D. M., International Economics, Himalaya Publishing House, New Delhi, 2009.
2. Salvatore D., International Economics: Trade and Finance, Wiley Publication, 1983.
3. Hajela, T. N., Money, Banking and International Trade, Ane Books Pvt. Ltd., New Delhi, 2009.
4. Bhagwati J., In Defense of Globalization, Oxford University Press, 2007.
5. Dwivedi, D. N., International Economics: Theory and Policy, Vikas Publishing House, 2013.

**B.Sc. Part-II SEMESTER IV**  
**BECP 243: Major Practical IV**

**Course Objective:** Student should be able to...

1. acquire a foundational understanding of the principles, history, and theories underlying co-operative enterprises.
2. comprehend the diverse forms of co-operative organizations, their structures, and their roles in various sectors of the economy.
3. synthesize knowledge from various fields to formulate policy recommendations and strategic responses to global economic challenges.
4. study the effectiveness of international economic policies and institutions in promoting global prosperity, stability, and development.

**Group A**

Sr. No.	Name of Practical	No. of hours per practical
1.	Overview of co-operative principles, history, and development of the co-operative movement.	4
2.	Exploration of different forms of co-operative organizations, including agricultural co-ops, credit unions, and worker-owned enterprises.	4
3.	Understanding the legal requirements and regulatory frameworks governing co-operative enterprises in different jurisdictions.	4
4.	Analysis of democratic decision-making processes, board governance, and member participation in co-operative management.	4
5.	Principles of financial planning, budgeting, and accounting specific to co-operative enterprises.	4
6.	Strategies for fostering member involvement, building trust, and promoting a sense of ownership in co-operative businesses.	4
7.	Approaches to marketing co-operative products, accessing markets, and building brand identity for co-operative enterprises.	4
8.	Examination of the social mission of co-operatives, including their role in poverty alleviation, empowerment of marginalized groups, and community development.	4
9.	Analysis of co-operative models in the context of international development, including microfinance, fair trade, and community-based initiatives.	4
10.	Exploration of innovative practices and business models adopted by co-operatives to enhance sustainability and adapt to changing market conditions.	4
11.	Application of co-operative principles to real-world scenarios.	4
12.	Explore specific aspects of co-operative development and management.	4
13.	Future trends in the co-operative movement.	4
14.	Future challenges in the co-operative movement.	4
15.	Explore specific aspects of social impact.	4

## Group B

<b>Sr. No.</b>	<b>Name of Practical</b>	<b>No. of hours per practical</b>
1.	Overview of key concepts, theories, and historical perspectives in international trade and finance.	4
2.	Analysis of theories such as comparative advantage, Heckscher-Ohlin model, and Ricardo-Viner model.	4
3.	Examination of new trade theories, including economies of scale, imperfect competition, and strategic trade policy.	4
4.	Analysis of trade policy instruments, trade barriers, tariff and non-tariff barriers, and their impacts on international trade patterns.	4
5.	Study of regional trade agreements, preferential trade agreements, and their effects on trade flows and economic welfare.	4
6.	Understanding exchange rate determination, exchange rate regimes, and the role of central banks in managing exchange rates.	4
7.	Analysis of the components of the balance of payments, their interrelationships, and the implications for countries' economic policies.	4
8.	Examination of the causes and consequences of globalization, including the integration of goods, services, capital, and labor markets.	4
9.	Study of capital mobility, capital account openness, capital flows, and their implications for exchange rates and financial stability.	4
10.	Analysis of currency crises, financial contagion, and policy responses to financial instability at the global and national levels.	4
11.	Overview of international economic organizations such as the WTO, IMF, World Bank, and their roles in promoting economic cooperation and development.	4
12.	Discussion on the relationship between trade openness, economic growth, income distribution, and poverty reduction in developing countries.	4
13.	Examination of challenges and prospects for global economic governance, including reform proposals for international economic institutions.	4
14.	Application of economic theories to real-world international economic issues through case studies, simulations, and policy analysis exercises.	4
15.	Evaluation of international economic policies and institutions, and formulation of policy recommendations to address global economic challenges.	4

**Course Outcomes:** Student will be able to...

1. apply co-operative principles to analyze issues such as governance structure, member engagement, and financial management in co-operative organizations.
2. analyze the social and economic impacts of co-operative enterprises on members, employees, and local communities, considering factors such as income distribution, social capital, and community development.
3. develop comprehensive strategies for addressing global economic challenges such as income inequality, environmental degradation, and economic imbalances.
4. evaluate the effectiveness of international economic institutions such as the World Trade Organization (WTO), International Monetary Fund (IMF), and World Bank in promoting global economic stability, development, and cooperation.

**References:**

1. Mathur B. S., Co-operation in India, Sahitya Bhavan Publications and Distributors, Agra, 2001.
2. Madam G.R., Co-operative Movement in India, Mittal Publication, New Delhi, 2007.
3. Powar Netaji V. and Gaikwad Y.S., Edited Principles and Practice of Co-operation Center for Distance Education, Shivaji University, Kolhapur, 2012.
4. B. L. Mathur, Rural Development and Co-operation, RBSA Publishers, 2006.
5. T. N. Hajela, Principles, Problems and Practice and Cooperation, Ane Books Pvt. Ltd., 7<sup>th</sup> edition, 2010.
6. Mithani, D. M., International Economics, Himalaya Publishing House, New Delhi, 2009.
7. Salvatore D., International Economics: Trade and Finance, Wiley Publication, 1983.
8. Hajela, T. N., Money, Banking and International Trade, Ane Books Pvt. Ltd., New Delhi, 2009.
9. Bhagwati J., In Defense of Globalization, Oxford University Press, 2007.
10. Dwivedi, D. N., International Economics: Theory and Policy, Vikas Publishing House, 2013.



**B. Sc. II Semester III**  
**BECT 234: Econometrics II**

**Course Objectives:** Student should be able to

1. gain advanced knowledge of descriptive statistics, multiple regression analysis, simultaneous equations methods, and time series methods in econometrics.
2. understand the assumptions, properties, and limitations of each econometric technique.
3. comprehend the underlying mathematical and statistical concepts behind descriptive statistics, multiple regression analysis, simultaneous equations methods, and time series methods.
4. synthesize knowledge from descriptive statistics, multiple regression analysis, simultaneous equations methods, and time series methods to design and conduct econometric research projects.

Credits = 02	SEMESTER-III BECT 234: Econometrics II	No. of hours per unit
<b>UNIT I</b>	<b>DESCRIPTIVE STATISTICS</b>	<b>(07)</b>
	1.1 Frequency Distribution 1.2 Measures of Central Tendency 1.3 Measures of Dispersion 1.4 Shape of Frequency Distribution	
<b>UNIT II</b>	<b>MULTIPLE REGRESSION ANALYSIS</b>	<b>(08)</b>
	2.1 The Three Variable Linear Model 2.2 Tests of Significance of Parameter Estimates 2.3 The Coefficient of Multiple Determinations 2.4 Test of The Overall Significance Of The Regression 2.5 Partial Correlation Coefficient 2.6 Matrix Notation	
<b>UNIT III</b>	<b>SIMULTANEOUS EQUATIONS METHODS</b>	<b>(08)</b>
	3.1 Simultaneous Equations Models 3.2 Identification 3.3 Estimation Indirect Least Squares 3.4 Estimation Two Stage Least Squares	
<b>UNIT IV</b>	<b>TIME SERIES METHODS</b>	<b>(07)</b>
	4.1 ARMA 4.2 Identifying ARMA 4.3 Non-Stationary Series 4.4 Testing for Unit Root 4.5 Cointegration and Error Correlation 4.6 Casualty	

**Course Outcomes:** Student will be able to...

1. apply descriptive statistics techniques to analyze economic data sets, including measures of central tendency, dispersion, and graphical representation.
2. analyze the assumptions of econometric models and assess their validity using diagnostic tests and sensitivity analysis.
3. develop econometric models and hypotheses for testing.
4. evaluate the reliability and robustness of econometric results through hypothesis testing, model diagnostics, and sensitivity analysis.

**References:**

1. Gujarati D. N., Basic Econometrics, McGraw-Hill Education, New York, 2009.
2. Wooldridge, J. M., Introductory Econometrics: A Modern Approach, OH: South-Western Cengage Learning, Mason, 2016.
3. Davidson, R. and MacKinnon J. G., Econometric Theory and Methods, Oxford University Press, New York, 2003.
4. Hamilton, J. D., Time Series Analysis, Princeton University Press, Princeton, NJ, 1994.
5. Greene, W. H., Econometric Analysis, Prentice Hall, Upper Saddle River, NJ, 2012.

**B.Sc. Part-II SEMESTER III**  
**BECP 235: Minor Practical III**

**Course Objective:** Student should be able to...

1. acquire knowledge of the assumptions, limitations, and applications of each econometric technique.
2. comprehend the mathematical and statistical foundations of econometric methods, including their interpretation and significance in empirical research.
3. interpret econometric results and evaluate their reliability and validity.
4. synthesize empirical evidence and theoretical concepts to formulate hypotheses, test economic theories, and inform policy recommendations.

Sr. No.	Name of Practical	No. of hours per practical
1.	Overview of econometric methods, data sources, and research design.	3
2.	Introduction to measures of central tendency, dispersion, and graphical representation. Practical exercises on data summarization.	3
3.	Exploration of descriptive statistics techniques, including skewness, kurtosis, and graphical representation.	3
4.	Introduction to simple linear regression models. Hands-on exercises on model estimation and interpretation.	3
5.	Extension to multiple regression models with multiple predictors. Practical exercises on model specification and interpretation.	3
6.	Analysis of the assumptions of regression analysis and diagnostic testing techniques.	3
7.	Techniques for selecting appropriate functional forms and variables for regression models. Practical exercises on model specification.	3
8.	Introduction to hypothesis testing, significance testing, and confidence intervals in regression analysis.	3
9.	Introduction to systems of equations and identification techniques. Practical exercises on simultaneous equations modeling.	3
10.	Extension to instrumental variables estimation. Hands-on exercises on endogeneity issues.	3
11.	Introduction to time series data, stationarity, and autocorrelation. Practical exercises on time series modeling.	3
12.	Exploration of time series modeling techniques, including seasonality and trend analysis.	3
13.	Introduction to autoregressive integrated moving average (ARIMA) models. Hands-on exercises on model estimation and forecasting.	3
14.	Extension to seasonal ARIMA models and model diagnostics. Practical exercises on forecasting economic time series.	3

15.	Analysis of cointegration and error correction mechanisms in time series data. Practical exercises on modeling long-run relationships.	3
16.	Introduction to panel data models and fixed effects estimation. Hands-on exercises on panel data modeling.	3
17.	Extension to random effects estimation and robustness checks. Practical exercises on panel data analysis.	3
18.	Nonlinear regression, limited dependent variable models, and Bayesian econometrics.	3
19.	Exploration of advanced topics, including machine learning methods and big data econometrics.	3
20.	Application of econometric techniques to real-world economic data sets.	3

**Course Outcomes:** Student will be able to...

1. apply multiple regression analysis to estimate relationships between dependent and independent variables, controlling for potential confounding factors.
2. analyze the results of multiple regression analysis, simultaneous equations methods, and time series methods to draw conclusions about economic relationships.
3. develop the reliability and robustness of econometric results through hypothesis testing, model diagnostics, and sensitivity analysis.
4. evaluate the policy implications of econometric findings and assess their relevance and significance in addressing economic questions and informing policy decisions.

**References:**

1. Gujarati D. N., Basic Econometrics, McGraw-Hill Education, New York, 2009.
2. Wooldridge, J. M., Introductory Econometrics: A Modern Approach, OH: South-Western Cengage Learning, Mason, 2016.
3. Davidson, R. and MacKinnon J. G., Econometric Theory and Methods, Oxford University Press, New York, 2003.
4. Hamilton, J. D., Time Series Analysis, Princeton University Press, Princeton, NJ, 1994.
5. Greene, W. H., Econometric Analysis, Prentice Hall, Upper Saddle River, NJ, 2012.

## B. Sc. II Semester IV

### BECT 244: Computer Applications in Economics II

**Course Objectives:** Student should be able to...

1. gain a comprehensive understanding of the foundational principles and evolution of computing.
2. acquire practical skills in using various computing tools and software.
3. understand their applications in fields such as economics, business, and research.
4. explore the functionalities and implications of the internet.

<b>Credits = 02</b>	<b>SEMESTER-IV BECT 244: Computer Applications in Economics II</b>	<b>No. of hours per unit</b>
<b>UNIT I</b>	<b>Philosophical Foundations of Computing</b>	<b>(09)</b>
	Evolution of computers and computer generations, Classification of computers, Computer generations, Artificial Intelligence, Objectives and Functions of Operating System, Programming software, Application Software, Utility software, Philosophy of open-source software, Social computing, Social networking sites.	
<b>UNIT II</b>	<b>Data Analysis</b>	<b>(06)</b>
	Working with MS Excel, Calculation operators, Arithmetic operators, Application of MS Excel in Economics.	
<b>UNIT III</b>	<b>Database Management</b>	<b>(06)</b>
	Database management system, Models of dbms, Main functions of dbms, Microsoft access, PowerPoint.	
<b>UNIT IV</b>	<b>The Internet and e-commerce</b>	<b>(09)</b>
	Meaning and scope of the Internet, History of the Internet, Advantages and disadvantages of the Internet, Internet in education, RSS Reader, Types of Search Engines, Email terminology, Types of Email Programs, browsing the www, downloading from and uploading to the internet, internet glossary, online shopping and e-business/e-commerce, technologies of e-commerce, Systems of payments in e-commerce, Advantages and Disadvantages of E-commerce.	

**Course Outcomes:** Student will be able to ...

1. know the historical development of computing and the evolution of computer generations.
2. identify the objectives and functions of different types of software, such as operating systems, application software, and utility software.
3. apply MS Excel for performing calculations, data analysis, and economic modeling.
4. analyze data using MS Excel by applying calculation operators, arithmetic operators, and statistical functions.

**References:**

1. Dale, N. and Lewis., Computer Science Illuminated, Jones and Bartlett Learning, 2019.
2. Ramakrishnan, R., and Gehrke J., Database Management Systems, McGraw-Hill Education, 2003.
3. Cormen, T. H., Leiserson, C. E., Rivest R. L., and Stein C., Introduction to Algorithms, The MIT Press, 2009.
4. Laudon, K. C., and Traver C. G., E-Commerce: Business, Technology, Society, Pearson, 2021.
5. Silberschatz, A., Galvin, P. B. and Gagne G., Operating System Concepts, Wiley, 2018.

## B.Sc. Part-II SEMESTER IV

### BECP 245: Minor Practical IV

**Course Objective:** Students will be able to

1. understand the philosophical foundations of computing and their implications in economic analysis.
2. learn data analysis techniques to interpret economic data effectively.
3. implement databases to manage economic information efficiently.
4. study the impact of the internet and e-commerce on economic activities and policy-making.

<b>Practical No.</b>	<b>Name of Practical</b>	<b>No. of hours per practical</b>
1.	Philosophical Foundations of Computing.	3
2.	Application of statistical techniques to interpret economic trends and patterns.	3
3.	Graphs and charts to represent economic data.	3
4.	Fundamentals of database management systems.	3
5.	Relational model and its application in economic data management.	3
6.	Structured Query Language (SQL) for database querying.	3
7.	Database schema for a specific economic application.	3
8.	E-commerce and its impact on businesses and consumers.	3
9.	E-commerce platforms and their features.	3
10.	Impact of e-commerce on a specific industry or region.	3
11.	Application of big data analytics in economic research.	3
12.	Real-world applications of machine learning in economic forecasting and policy analysis.	3
13.	Ethical principles and guidelines in computational economics.	3
14.	Visualizations to explore economic trends, relationships, and patterns.	3
15.	Monte Carlo simulations using spreadsheet software.	3
16.	Methods for economic forecasting, such as time series analysis, regression modeling, and forecasting techniques.	3
17.	Game theory simulations to analyze strategic interactions and decision-making in economic contexts.	3
18.	Behavioral economics principles and experimental design.	3
19.	Simulating economic policy interventions and evaluating their impact using computational models.	3
20.	Econometric techniques for analyzing economic data and estimating economic relationships.	3

**Course Outcomes:** Students will be able to...

1. apply statistical software to analyze real-world economic datasets and draw meaningful conclusions.
2. utilize computational models to simulate economic scenarios and analyze their implications.
3. evaluate the effectiveness of different computational methods in economic analysis.
4. design and implement relational databases to store and retrieve economic data efficiently.

**References:**

1. Dale, N. and Lewis., Computer Science Illuminated, Jones and Bartlett Learning, 2019.
2. Ramakrishnan, R., and Gehrke J., Database Management Systems, McGraw-Hill Education, 2003.
3. Cormen, T. H., Leiserson, C. E., Rivest R. L., and Stein C., Introduction to Algorithms, The MIT Press, 2009.
4. Laudon, K. C., and Traver C. G., E-Commerce: Business, Technology, Society, Pearson, 2021.
5. Silberschatz, A., Galvin, P. B. and Gagne G., Operating System Concepts, Wiley, 2018.



**B.Sc. II Semester III**  
**BECP VSC 1: Financial Planning and Analysis I**

**Course Objectives:** Student should be able to...

1. understand the principles and concepts of financial planning and analysis.
2. interpret financial data to make informed decisions.
3. learn budgeting techniques to create a comprehensive financial plan.
4. study the effectiveness of debt management strategies.

Credits=2	Semester III BECP VSC 1: Financial Planning and Analysis I	No. of lectures per practical
1	Set Clear Goals: Define short-term and long-term financial objectives.	3
2	Budgeting: Create a detailed budget to track income and expenses.	3
3	Cash Flow Management: Monitor cash flow regularly to ensure liquidity.	3
4	Expense Tracking: Keep tabs on all expenses to identify areas for savings.	3
5	Forecasting: Use historical data and trends to predict future financial performance.	3
6	Variance Analysis: Compare actual financial results to budgeted or forecasted figures.	3
7	Cost Control: Implement strategies to reduce unnecessary expenses.	3
8	Revenue Optimization: Explore ways to increase revenue streams.	3
9	Investment Diversification: Spread investments across different asset classes to minimize risk.	3
10	Debt Management: Manage debt levels and prioritize repayments.	3
11	Savings Plan: Establish a savings plan for emergencies and future goals.	3
12	Tax Planning: Understand tax implications and optimize tax efficiency.	3
13	Financial Reporting: Produce accurate and timely financial reports for stakeholders.	3
14	Scenario Analysis: Assess the impact of various scenarios on financial outcomes.	3
15	Benchmarking: Compare financial performance to industry peers or standards.	3
16	Regular Review: Review financial plans and make adjustments as needed.	3
17	Continuous Learning: Stay updated on financial trends, regulations, and best practices.	3
18	Professional Advice: Consider consulting with a financial advisor for personalized guidance.	3
19	Stay Disciplined: Stick to the plan and remain disciplined in financial decision-making.	3
20	Risk Management: Identify potential risks and develop strategies to mitigate them.	3

**Course Outcomes:** Student will be able to...

1. analyze revenue opportunities and propose strategies for revenue optimization.
2. design an investment portfolio considering diversification principles.
3. develop strategies for debt management and repayment prioritization.
4. create a personalized savings plan aligned with their financial objectives.

**References:**

1. Gitman, L. J. and Chad J. Z., Principles of Managerial Finance, Pearson, 2020
2. Horngren, C. T., Sundem G. L., and Stratton W. O., Introduction to Financial Accounting, Pearson, 2021.
3. Brigham, E. F. and Houston J. F., Fundamentals of Financial Management, Cengage Learning, 2020.
4. Horne V., James C., and Wachowicz J. M., Fundamentals of Financial Management, Pearson, 2019.
5. Jones, T. C., and Abernathy W. J., Managing Business to Business Marketing Communications: A Handbook of B2B Practices and Techniques, John Wiley & Sons, 2017.

**B.Sc. II Semester IV**  
**BECP VSC 2: Financial Planning and Analysis II**

**Course Objectives:** Student should be able to...

1. establish and maintain an emergency fund equivalent to at least three to six months' worth of living expenses.
2. implement automated bill payments and savings transfers to ensure consistency and reduce the likelihood of missed payments.
3. Explore opportunities for additional income through freelance work, part-time employment, or entrepreneurship.
4. study changes in financial circumstances and adjust plans accordingly.

Credits=2	Semester IV BECP VSC 2: Financial Planning and Analysis II	No. of lectures per practical
1	Emergency Fund: Build an emergency fund equivalent to at least three to six months' worth of living expenses	3
2	Automate Finances: Set up automatic bill payments and savings transfers to ensure consistency and reduce the chance of missed payments.	3
3	Negotiate Expenses: Negotiate with service providers, such as cable or internet companies, for better rates or discounts	3
4	Meal Planning: Plan meals in advance and shop with a grocery list to avoid impulse purchases and reduce food expenses.	3
5	Energy Efficiency: Implement energy-saving measures at home, such as using LED bulbs and unplugging electronics when not in use, to lower utility bills.	3
6	Side Hustle: Explore opportunities for additional income through freelance work, part-time jobs, or starting a small business.	3
7	529 Plan: Start a 529 college savings plan for your children's education to benefit from tax advantages and compound interest.	3
8	Health Savings Account (HSA): Contribute to an HSA if eligible, to save for medical expenses tax-free.	3
9	Review Subscriptions: Regularly review subscriptions and memberships to determine if they are still necessary or can be canceled to save money.	3
10	Price Comparison: Compare prices before making significant purchases to ensure you're getting the best deal.	3
11	Refinance Loans: Consider refinancing high-interest loans or mortgages to lower monthly payments and save on interest over time.	3
12	Home Maintenance: Keep up with regular home maintenance to prevent costly repairs in the future.	3
13	Annual Financial Goals: Set specific financial goals for each year, such as paying off a certain amount of debt or increasing retirement contributions.	3

14	Investment Review: Review investment portfolios periodically to rebalance and ensure they align with your risk tolerance and goals.	3
15	Charitable Giving: Incorporate charitable giving into your budget and consider donating appreciated assets to maximize tax benefits.	3
16	Credit Score Monitoring: Monitor your credit score regularly and take steps to improve it, such as paying bills on time and keeping credit card balances low.	3
17	Insurance Review: Review insurance policies annually to ensure coverage is adequate and premiums are competitive.	3
18	Estate Planning: Create or update your estate plan, including wills, trusts, and powers of attorney, to protect your assets and ensure your wishes are carried out.	3
19	Networking: Network with professionals in your industry or financial advisors to gain insights and potentially uncover new opportunities.	3
20	Stay Flexible: Remain adaptable to changes in your financial situation or goals, and be willing to adjust your plans accordingly.	3

**Course Outcomes:** Student will be able to...

1. apply meal planning techniques to optimize grocery spending and dietary preferences.
2. analyze refinancing options and their potential impact on overall debt management.
3. Evaluate the cost-benefit ratio of home maintenance efforts and their impact on long-term financial planning.
4. develop resilience and problem-solving skills to navigate unexpected challenges.

**References:**

1. Gitman, L. J. and Chad J. Z., Principles of Managerial Finance, Pearson, 2020
2. Horngren, C. T., Sundem G. L., and Stratton W. O., Introduction to Financial Accounting, Pearson, 2021.
3. Brigham, E. F. and Houston J. F., Fundamentals of Financial Management, Cengage Learning, 2020.
4. Horne V., James C., and Wachowicz J. M., Fundamentals of Financial Management, Pearson, 2019.
5. Jones, T. C., and Abernathy W. J., Managing Business to Business Marketing Communications: A Handbook of B2B Practices and Techniques, John Wiley & Sons, 2017.

### B.Sc. II Semester III

#### BECP SEC 2: Behavioral Economics and Decision Making I

**Course Objectives:** Student should be able to...

1. observe real-world applications of behavioral economics principles.
2. gain practical insights from industry professionals in behavioral economics.
3. learn behavioral economics principles in various contexts.
4. study outcomes of games to understand decision-making processes.

Credits=2	Semester III BECP SEC 2: Behavioral Economics and Decision Making I	No. of lectures
1	Simulation of real-life decision-making situations.	3
2	Analysis of real-world examples of behavioral economics in action	3
3	Interactive games to illustrate behavioral principles.	3
4	Application of behavioral economics in operations.	3
5	Discussion of conflicting theories.	3
6	Discussion of conflicting perspectives.	3
7	Analysis of real-life decision-making behaviors	3
8	Analysis of datasets to identify behavioral patterns.	3
9	Testing theories of Behavioral economics.	3
10	Explore ethical considerations in decision making.	3
11	Reflection on personal decision-making processes	3
12	Analysis of videos depicting decision-making scenarios.	3
13	Applying behavioral economics concepts.	3
14	Collecting data on decision-making behaviors.	3
15	Observe real-life decision-making behaviors.	3
16	Swap roles to understand different perspectives.	3
17	Provide and receive feedback on decision-making processes.	3
18	Evaluate decision-making biases.	3
19	Evaluate decision-making heuristics.	3
20	Assessment of decision options using behavioral frameworks.	3

**Course Outcomes:** Student will be able to...

1. apply theoretical knowledge to practical decision-making scenarios.
2. analyze and evaluate organizational decision-making processes.
3. evaluate different viewpoints on behavioral economics theories.
4. design experiments to test hypotheses and analyze results.

**References:**

1. Mullainathan, S., and Thaler, R. H., Behavioral Economics, International Encyclopedia of the Social and Behavioral Sciences, Pergamon, 2001.
2. Camerer, C., Loewenstein, G., and Rabin, M., Advances in Behavioral Economics, Princeton University Press, 2011.
3. Sunstein, C. R., and Thaler, R. H., Nudge: Improving Decisions about Health, Wealth, and Happiness, Yale University Press, 2008.
4. Gneezy, U., and List, J. A., The Handbook of Experimental Economics, Princeton University Press, 2013.
5. Thaler, R. H., Misbehaving: The Making of Behavioral Economics, W. W. Norton and Company, 2016.
6. Loewenstein, G., and Camerer, C. F., Behavioral Economics: Past, Present, Future, Princeton University Press, 2003.

## B.Sc. II Semester IV

### BECP SEC 3: Behavioral Economics and Decision Making II

**Course Objectives:** Student should be able to...

1. understand the underlying principles behind these findings and how they relate to decision-making processes.
2. propose ways to mitigate biases in decision-making processes.
3. study effectiveness and validity of the designed simulations.
4. learn about key figures in the field of behavioral economics and their contributions.

Credits=2	Semester IV BECP SEC 3: Behavioral Economics and Decision Making II	No. of lectures per practical
1	Findings on specific behavioral economics topics	3
2	Anecdotes related to decision making.	3
3	Creation of decision trees for complex scenarios.	3
4	Use infographics and diagrams to illustrate behavioral economics concepts.	3
5	Discussions to explore concepts in behavioral economics.	3
6	Testing knowledge and understanding of biases.	3
7	Discussion topics related to the course.	3
8	Decision making in simulated market environments.	3
9	Impact of behavioral economics on individuals.	3
10	Designing simulated behavioral phenomena	3
11	Reflection on experiences and lessons learned in Behavioral Economics.	3
12	Study influential figures in behavioral economics.	3
13	Comparing decision-making behaviors across cultures.	3
14	Engaging with online resources and simulations	3
15	Solution of decision-making challenges.	3
16	Designing incentives to influence decision making.	3
17	Feedback influenced decision making.	3
18	Use of data to predict decision outcomes.	3
19	Write topics related to the course	3
20	Application of behavioral economics concepts to a real-world problem.	3

**Course Outcomes:** Student will be able to...

1. apply behavioral economics concepts in real-world scenarios.
2. analyze different types of infographics and diagrams used in behavioral economics literature.
3. evaluate the effects of behavioral economics interventions on individuals' decision-making behaviors.
4. create decision trees for complex decision-making scenarios.

**References:**

1. Mullainathan, S., and Thaler, R. H., Behavioral Economics, International Encyclopedia of the Social and Behavioral Sciences, Pergamon, 2001.
2. Camerer, C., Loewenstein, G., and Rabin, M., Advances in Behavioral Economics, Princeton University Press, 2011.
3. Sunstein, C. R., and Thaler, R. H., Nudge: Improving Decisions about Health, Wealth, and Happiness, Yale University Press, 2008.
4. Gneezy, U., and List, J. A., The Handbook of Experimental Economics, Princeton University Press, 2013.
5. Thaler, R. H., Misbehaving: The Making of Behavioral Economics, W. W. Norton and Company, 2016.
6. Loewenstein, G., and Camerer, C. F., Behavioral Economics: Past, Present, Future, Princeton University Press, 2003.



**Rayat Shikshan Sanstha's**  
**Yashavantrao Chavan Institute of Science, Satara (Autonomous)**  
**Lead College of Karmaveer Bhaurao Patil University, Satara**  
**Department of Economics**  
**SEMESTER III**  
**BECT VEC 2: Environmental Awareness for Economics**

**Course Objectives:** Student should be able to...

1. gain an awareness of the environmental issues and challenges that can arise in the practice of science & technology.
2. explore the environmental laws and ethics.
3. understanding the interconnectedness of the *SDGs* and their relevance to economics.
4. emphasize the role of Economics to address environmental issues.

<b>Credits=2</b>	<b>SEMESTER-III</b>	<b>No. of hours per unit</b>
	<b>BMT-VEC-II: Environmental Awareness for Economics</b>	
<b>UNIT I</b>	<b>Environmental Issues</b>	<b>(08)</b>
	Pollution (Air, Water and Land), Fresh-water overuse, Natural disasters, Fuel and Energy shortage due to overuse, Increase in wasteland, Biodiversity loss, Global warming and climate change, role of mathematics in resolving environmental issues.	
<b>UNIT II</b>	<b>Environmental laws and ethics</b>	<b>(07)</b>
	Environmental Protection Act, Wildlife Protection Act, Forest Conservation Act, Prevention and Control of Pollution Act (Air, Water and Land), from unsustainable to sustainable development, Responsibilities of an Environmentally aware citizen.	
<b>UNIT III</b>	<b>Sustainable Development Goals</b>	<b>(07)</b>
	Overview of the Sustainable Development Goals, Sustainable Development in India, Global Indicator Framework, National Indicator Framework Policy and Guidelines.	
<b>UNIT IV</b>	<b>Role of Economics in meeting Sustainable Development Goals</b>	<b>(08)</b>
	Resource Allocation, Policy Analysis, Incentive Design, Trade-offs Assessment, Cost-Benefit Analysis, Market-Based Instruments	

**Course Outcomes:** Student will be able to...

1. analyze about environmental challenges such as pollution, climate change, biodiversity loss and resource depletion.
2. evaluate the effectiveness of environmental laws and policies.
3. estimate data and results of Sustainable Development Goals using economical reasoning.
4. apply Economical tools and techniques to study and address environmental issues and meeting *SDGs*.

**Reference Books:**

1. Danial D. Chiras, Environmental Science, Jones & Bartlett Learning, 2016.
2. P. Leelakrishnan, Environmental Law in India, LexisNexis, 2020.
3. R. Rajagopalan, Environmental Studies: From Crisis to Sustainable Development, Oxford University Press, 2018.
4. P. D. Kaushik & Ajit Kumar, Understanding Sustainable Development Goals (SDGs): Concept, Implementation, Challenges and Opportunities, Springer, 2019.
5. Tony Norton, Eleanor H. Norton & Nicholas A. Booker, Mathematics and the Sustainable Development Goals: Solving Complex Problems, Springer, 2020.