

## COURSE CAPSULES

### First Semester

#### **EC 5101. Microeconomic Theory I (2)**

Introduction. Theory of firm; technology, profit maximization, cost minimization, duality. Theory of consumer behavior; utility maximization, choice, demand, duality. Theory of market structures; competitive markets, imperfectly competitive markets.

#### **EC 5102. Mathematical Economics (2)**

*Prerequisite: ST 5101*

Differential calculus; applications in graphing, maxima and minima, production, cost, revenue and profit functions. Exponents and logarithms; present values, annuities. Linear algebra; first order and second order conditions. Constrained and unconstrained optimization. Homogeneous and homothetic functions. Economic applications of optimization

#### **EC 5103. Mathematical Programming (2)**

Introduction to mathematical programming; Linear programming (LP), Post-optimal analysis, Special types of LP problems, Shortcomings of LP. Extensions of LP to MOTAD, integer, separable, and stochastic programming. Nonlinear programming; Kuhn-Tucker conditions. Extensions of linear programming, game theory, Markov chains, inventory control and situation to agricultural planning and management.

#### **EC 5104. Agricultural Marketing I (2)**

Introduction to the basic concepts and definitions of agricultural marketing. Topics include market systems, grading of foods, price discovery, marketing efficiency, marketing by farmer groups, market system analysis and need for effective market system.

#### **EC 5105. History of Agricultural Policies in Sri Lanka (2)**

Review of post-independent agricultural policies in Sri Lanka. Economic analysis of agricultural policies. Impacts of agricultural policies on economic growth and efficiency, farm income and poverty alleviation. Comparative agricultural policy analysis.

#### **EC 5106. Resource and Environmental Economics I (2)**

Introduction to resource economics. Review of market economic system. Introduction to welfare economics. Market failures; property rights, externalities, public goods. Common property resources. Classification of natural resources. Economics of renewable resource management; fisheries economics, forest economics, water resource economics. Economics non-renewable resource management.

#### **EC 5107. Project Analysis (2)**

A survey of the theoretical underpinnings of public sector cost-benefit analysis. The project cycle. Valuation of costs and benefits. Shadow pricing. Discounting. Measures of project worth. Shortcomings of project analysis. Extended cost-benefit analysis.

#### **EC 5108. Water Resource Economics I (2)**

Introduction to economics of water resource allocation. Sectoral allocation of water. Economic principals of water resource allocation in agriculture. Water demand and supply characteristics. Water pricing; irrigation, industrial, and domestic sectors. Fundamental concepts of integrated water resource management.

#### **EC 5109. Resource Management in Tropical Farming Systems (2)**

Tropical environment and farming, Shifting cultivation systems, Fallow systems, Permanent upland systems, Irrigation systems, Perennial cropping systems, Farming systems research, Agroforestry systems, Ecological agriculture.

**EC 5110. Introduction to Economics (2)**

Economics as a social science. Nature and scope of economics. Economic elements and structures. Introduction to human behavior. Classical vs neoclassical schools of thought. Micro vs Macroeconomics. Introduction to environmental economics. Basic concepts of supply and demand and price mechanism. Competitive markets and economic efficiency.

**EC 5111. Ecology, Conservation and Management of Natural Resources (2)**

Introduction. Energy flows in ecosystems. Nutrient cycles. Population ecology. Ecology and evolution. Human ecology. Ecology and conservation. Eco-ethics. Economics of conservation.

**EC 5112. Macroeconomic Theory I (2)**

Measurements of macroeconomic performances. Analysis of determination of income, employment, interest rates and inflation. Monetary and fiscal policy. Classical and Keynesian approach to macroeconomic policy.

**EC 5113. Econometrics I (2)**

Review of probability and statistical theory. Regression analysis; concept, assumptions and estimation. Interval estimation and hypothesis testing. Functional forms; elasticity and economic applications. Dummy variables; applications and interpretation.

**EC 5114. Quantitative Methods (2)**

Computer literacy. Linear and multiple regression, applications to natural resource management. Mathematical programming, applications to natural resource management.

**EC 5120. Land Economics (2)**

Principal of Land Utilization, Objectives of rational land use, Elements of land use planning, Political economy of land. Soil surveys and land classification methods, Relationship between land use classification and economic utilization of land, Farm management techniques for the optimization of land use. Interrelationship and conflicts between optimum micro land utilization principals and macro land use objectives, Principals of conservation; forestry, land reclamation and Soil conservation as land policies, Land settlement policies; Economic and social evaluation of land settlement policies and multi-purpose project Land reform principals and policies, Land policies of Sri Lanka Since the 1920's.

**EC 5153. Resource Planning and Management (2)**

Introduction to planning theory. Planning process. Regional approaches to resource planning. Natural and physical analysis. Socio-economic analysis. Carrying capacity. Vulnerability and susceptibility. Watershed management. Rapid rural appraisal. Application of agro-ecosystem analysis. Environment impact assessment. Cost - benefit analysis in resources planning and management.

**EC 5154. Agricultural Finance (2)**

This course provides a fundamental knowledge of economic and management principles and analytical procedures that facilitate in obtaining control over capital use and its efficiency. This covers the topics, principals of agricultural finance, principles of financial management of the farm business, financial markets and agricultural credit institutions.

**EC 5156. Livestock Economics and Marketing (2)**

Introduction to livestock economics, Theory of factor-product, factor-factor, product-product, Theory of demand, theory of markets, Government policies in livestock industry, Vertical horizontal interaction in livestock industry, Farm records, Farm planning and budgeting, Linear programming with examples in livestock industry. Cost-benefit analysis of egg production, marketing of eggs, broilers, meat and meat products, milk and milk products, fish and fish products.

**PDEC 5101. Contemporary Issues in Development (2)**

Concepts in Development and underdevelopment, Development programming, Development issues (with a special emphasis on rural communities); Culture, Gender, Capacity building and empowerment, Politics, Corruption and governance, Participation and accountability, Social mobility and migration, Natural disasters and conflicts.

**PDEC 5102. Principles of Development Management (2)**

Economic fundamentals, Institutional economics, Development theories, Role of agriculture in economic development, Development planning, Development administration, Management for development.

**PDEC 5103. Techniques in Development Project Planning (2)**

Fundamentals for development projects, Project planning stages, Project planning tools, Evaluation and monitoring tools, Issues in development project planning, Case studies in rural development, Results based monitoring and evaluation.

## **Second Semester**

**EC 5203. Development Economics (2)**

Concepts and approaches to economic development and human welfare, including theories of growth, structural change, income distribution and dual economy ;models. Role of agriculture in economic development. Role of government in developing countries. Planning and development.

**EC 5204. Applied Production Economics (2)**

Special topics in production economics. Estimation of production, cost, supply and profit functions using flexible function forms. Frontier production functions; stochastic frontier functions and data envelopment analysis. Decision making under risk and uncertainty. Expected utility theory and stochastic dominance. Applications including output response, input adjustments and diversifications.

**EC 5207. Food and Nutrition Economics (2)**

Basic economic concepts and role of income and prices in determining nutritional status. Household income analysis. Intra-household Issues. Farm household behavior and price policy. Markets; functions and failures. Consumer price interventions and income interventions. Macro-economic policies and structural adjustment.

**EC 5208. Water Resource Economics II (2)**

Surface and ground water development and challenges. Decision support system for water pricing and management. Frontiers in water resource economic research.

**EC 5209. Special Topics in Agricultural Economics (1)**

This course is conducted in seminar format. Current topics relevant to agricultural sector in Sri Lanka, which are not covered in other courses, will be the focus of this course.

**EC 5210. Managerial Resource Economics (2)**

Introduction; review of free market economic system. Market failures. Property rights. Common property resource management. Population and environment. Definitions and classification of natural resources. Economics of non-renewable resource management. Economics of renewable resource management. Land and water resource economics. Economics of pollution control.

**EC 5212. Seminar in Sustainable Development (2)**

Sustainable development; definitions, evolution of the concept, ecology and economics, eco-ethics, strong and weak sustainability criteria. Population and sustainable development. Development financing agencies and sustainability. Sustainable development in Sri Lanka.

**EC 5213. Agricultural Policies in Developing Countries (2)**

Rationales for government intervention; Criteria for policy evaluation. economic, social and political; Quantitative policy analysis; Irrigation and land settlement policies in the developing world; Price policies; Interventions in marketing; Trade policies; Food and nutrition policies; Environmental policies.

**EC 5214. Agricultural Marketing and Price Analysis (2)**

Introduction to price theory and agricultural price analysis. Temporal price behaviour, derived demand, marketing margin, harmonic analysis. Risk and uncertainty in marketing. Role of commodity futures. Hedging strategies. Advertising effectiveness. Market segmentation.

**EC 5215. International Trade (2)**

Topics include global and regional trade agreements, WTO, SAPTA, SAFTA. Bi-lateral trade agreements in South Asia. International trade theory; absolute advantage, comparative advantage, Heckscher-Ohlin theory. international trade policy; tariffs and non-tariff barriers, economic integration.

**EC 5216. Macroeconomic Theory II (2)**

International economics; exchange rates, capital flows. Business cycle theory. Growth theories; Solow model, infinite horizons and overlapping generations models, new growth theory. Selected advanced topics.

**EC 5217. Dynamics of Resource Economics (2)**

Differential equations. Calculus of variation. Optimal control theory. Dynamic programming. Applications to natural resource management. Optimal harvesting of renewable resources; forests, fisheries, water. Optimal extraction of non-renewable resources.

**EC 5218. Quantitative Policy Analysis (2)**

Rationale for government interventions and the role of quantitative policy analysis. Analysis of irrigation and land settlement policies; Price policies, interventions in marketing; Trade policies food and nutrition policies; Environment policies. Quantitative techniques: Estimation and simulation of demand, supply, cost and profit systems. Measurement of market distortion; Partial equilibrium analysis and general equilibrium analysis.

**EC 5219. Resource and Environmental Economics II (2)**

Advanced analysis on externalities. Overview of environmental policies. Quantity control and price controls. Command and control methods. Pigouvian taxes and charges. Subsidies. Tradable permits. Liability rules; non-compliance fees, bond, and deposit refunds. Criteria for policy selection. General equilibrium effects and double dividend.

**EC 5221. Environmental Valuation (3)**

Economic values, benefits/costs and human welfare. Valuation using market prices; productivity change method, replacement cost method, human capital approach, cost of illness approach, defensive expenditure method, and opportunity cost approach. Surrogate market approaches; property value models, hedonic wage models, travel cost models. Stated preference methods; contingent valuation and choice experiments. Benefit transfer method.

**EC 5222. Microeconomic Theory II (2)**

General equilibrium analysis. Economic efficiency in general equilibrium context. Welfare measurements. First and second theorem of welfare. Special topics; labor leisure choices, risk and uncertainty, information economics, asset markets.

**EC 5223. Econometrics II (2)**

Violation of assumptions, special topics in econometrics; limited dependent variable models such as linear probability, probit, logit and tobit models, simultaneous equation models, seemingly unrelated models and their applications, deterministic and stochastic time series analysis, cointegration analysis.

**EC 5226. Field Visits (1)**

Visits to development projects and sites of academic interest on environmental and natural resources.

**EC 5237 Agricultural Value Chain Management (1)**

The Value Chain Approach, Value Chain Promotion as an Approach to Economic Development, Analyzing Agricultural Value Chains in Sri Lanka, Role of Related Sector in Promoting Value Chains in Agriculture Sector, Structured Learning Visits (assignment/presentation).

**EC 5297. Research Project (EE/NRM) (5)**

Students will be assigned to work on an on-going development project or to develop an environmental project under the supervision of an instructor. Based on the findings and/or work experience, students will be required to submit a written report and make a seminar presentation.

**EC 5298. Directed Study (5)**

A student should carry out an empirical project based on the guidance provided by an academic staff member and make an oral presentation.

**PDEC 5201. Research Skills for Community Development (2)**

Role of data and analysis in development, Development problem identification, Research planning, Data issues, Enumeration and survey techniques, Standard qualitative and quantitative techniques.

**PDEC 5202. Agribusiness and Enterprise Development (2)**

Role of business in community development, Phases in business development, Marketing environment, Business and growth linkages, Institutional issues in local enterprise development, Opportunities and constraints for business development, Rural entrepreneurship, Case studies and development of a local toolkit.

**PDEC 5203. Poverty and Social Impact Analysis (2)**

Definition and classification of poverty, Poverty measurement (monetary approach and non-monetary approach), Poverty concerns in development planning.