



National University of Engineering (UNI)

School of Civil Engineering
Syllabus 2027-I

1. COURSE

BEC101. General Economics (Mandatory)

2. GENERAL INFORMATION

2.1 Course	: BEC101. General Economics
2.2 Semester	: 1 st Semester.
2.3 Credits	: 3
2.4 Hours	: 2 HT; 2 HP;
2.5 Duration of the period	: 16 weeks
2.6 Type of course	: Mandatory
2.7 Learning modality	: Face to face
2.8 Prerequisites	: None

3. PROFESSORS

Meetings after coordination with the professor

4. INTRODUCTION TO THE COURSE

General Economics introduces the fundamentals of economic theory and its historical evolution, market functioning (supply, demand, and elasticity), market structures, production, costs, and firm profits, business economic and financial management, and the basic aspects of macroeconomics, growth, and globalization, as a foundation for the economic decision-making of engineering and computing professionals.

5. GOALS

- Apply the fundamental principles of economic theory to the analysis of engineering decisions.
- Analyze market functioning through supply, demand, and elasticity.
- Analyze the production, costs, and profits of a firm under different market structures.
- Understand the basic aspects of macroeconomics, economic growth, and globalization.

6. COMPETENCES

ABET-1) An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics. (Usage)

ABET-2) An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors. (Usage)

7. TOPICS

Unit 1: Fundamentals of Economic Theory (2 hours)	
Competences Expected: ABET-1	
Topics	Learning Outcomes
• Fundamental concepts of economic theory: scarcity, opportunity cost, and decision-making.	• Explain the fundamental concepts of economic theory [Familiarizarse].
Readings : [Mankiw2018]	

Unit 2: Pre-Classical and Classical Economics (4 hours)	
Competences Expected: ABET-1	
Topics	Learning Outcomes
• Mercantilist doctrine, Physiocracy, and the Tableau Economique of Quesnay • Adam Smith: invisible hand, division of labor, theory of value, and the critique of mercantilism • David Ricardo: comparative advantage, rent theory, Ricardian equivalence, and the corn laws debate • Marx's critique of classical economics: surplus value, exploitation, capital accumulation, and crisis theory	• Describe the central contributions of Adam Smith and David Ricardo to classical political economy [Familiarity] • Compare the Ricardian and Smithian theories of value and distribution and trace their influence on later economic schools [Usage] • Evaluate Marx's critique of classical economics and identify which elements retain analytical relevance [Assessment]
Readings : [Mankiw2018], [SamuelsonNordhaus2010]	

Unit 3: Consumer Theory (10 hours)	
Competences Expected: ABET-1	
Topics	Learning Outcomes
• Preference axioms (completeness, transitivity, continuity) and utility representation theorems • The utility maximization problem: Marshallian demand functions and Roy's identity • The expenditure minimization problem: Hicksian demand functions and Shephard's lemma • The Slutsky equation: decomposing price effects into substitution and income effects • Revealed preference theory: WARP, SARP, and empirical content of demand theory	• State the axioms of rational preference and the conditions for utility representation [Familiarity] • Derive Marshallian and Hicksian demand functions from utility and expenditure minimization problems [Usage] • Decompose price effects into substitution and income effects using the Slutsky equation [Assessment]
Readings : [Mankiw2018]	

Unit 4: Market Structures (4 hours)	
Competences Expected: ABET-1	
Topics	Learning Outcomes
• Competitive equilibrium: price-taking behavior, short-run and long-run supply, and zero-profit condition • Monopoly pricing: marginal revenue, deadweight loss, price discrimination (first, second, third degree) • Monopolistic competition: product differentiation, markup pricing, and free-entry equilibrium • Oligopoly models: Cournot, Bertrand, and Stackelberg competition; collusion and the prisoner's dilemma • Advanced pricing: bundling, two-part tariffs, versioning, and peak-load pricing	• Compare equilibrium outcomes across market structures in terms of price, output, and efficiency [Familiarity] • Calculate equilibrium price, quantity, and welfare under monopoly and Cournot duopoly [Usage] • Evaluate the welfare effects of market power and the rationale for antitrust policy [Assessment]
Readings : [Mankiw2018], [SamuelsonNordhaus2010]	

Unit 5: Producer Theory (6 hours)	
Competences Expected: ABET-1	
Topics	Learning Outcomes
• Production functions, isoquants, marginal products, and returns to scale • Cost minimization: conditional factor demands, cost functions, and Shephard's lemma • Profit maximization: output supply and factor demand under competitive and monopolistic conditions • Short-run vs. long-run costs, economies of scale and scope, and multi-product firms	• Describe production technology using production functions, isoquants, and returns to scale [Familiarity] • Derive cost functions and supply schedules from profit-maximizing behavior [Usage] • Analyze how input price changes affect output supply and factor demands using duality [Assessment]
Readings : [Mankiw2018]	

Unit 6: Financial Markets and Institutions (10 hours)	
Competences Expected: ABET-2	
Topics	Learning Outcomes
• Market microstructure: bid-ask spread, order flow, liquidity, and price discovery • Financial intermediation: banks as liquidity transformers, maturity mismatch, and bank runs (Diamond-Dybvig) • Systemic risk, financial contagion, macroprudential policy, and the 2008 financial crisis • Financial regulation: capital requirements, deposit insurance, lender of last resort, and Dodd-Frank	• Describe the role of financial intermediaries in the economy and the sources of systemic risk [Familiarity] • Analyze the sources of systemic risk in a financial system and identify channels of contagion using network and balance-sheet linkages [Usage] • Evaluate the design and trade-offs of macroprudential regulation in preventing financial crises [Assessment]
Readings : [Blank2017], [SamuelsonNordhaus2010]	

Unit 7: National Income Accounting (6 hours)	
Competences Expected: ABET-1	
Topics	Learning Outcomes
• GDP definition and measurement: expenditure, income, and production approaches; nominal vs. real GDP • National income identities: $Y = C + I + G + NX$; saving-investment relationship and current account • Price indices: GDP deflator, CPI, PPI; measurement of inflation and real variables • Balance of payments accounts: current account, capital account, and financial account	• Define GDP and explain the three approaches to its measurement [Familiarity] • Calculate real GDP growth, the GDP deflator, and the saving-investment balance from national accounts data [Usage] • Interpret discrepancies between national accounting approaches and identify measurement limitations [Assessment]
Readings : [SamuelsonNordhaus2010]	

Unit 8: Economic Growth Theory (6 hours)	
Competences Expected: ABET-1	
Topics	Learning Outcomes
• Solow-Swan growth model: capital accumulation, steady-state, convergence, and the golden rule • Exogenous technological progress, total factor productivity, and the Solow residual • Endogenous growth models: AK model, R&D-based models (Romer, Aghion-Howitt), and knowledge spillovers • Cross-country growth regressions, conditional convergence, and the role of institutions and human capital • Institutional determinants of growth: property rights, rule of law, and political economy	• Describe the Solow model and its predictions about capital accumulation and steady-state income [Familiarity] • Analyze the impact of saving rates and technological progress on long-run growth using the Solow model [Usage] • Compare exogenous and endogenous growth theories and their implications for policy [Assessment]
Readings : [SamuelsonNordhaus2010]	

8. WORKPLAN

8.1 Methodology

Individual and team participation is encouraged to present their ideas, motivating them with additional points in the different stages of the course evaluation.

8.2 Theory Sessions

The theory sessions are held in master classes with activities including active learning and roleplay to allow students to internalize the concepts.

8.3 Practical Sessions

The practical sessions are held in class where a series of exercises and/or practical concepts are developed through problem solving, problem solving, specific exercises and/or in application contexts.

9. EVALUATION SYSTEM

***** EVALUATION MISSING *****

10. BASIC BIBLIOGRAPHY