

## **Program: Economics & Econometrics**

### **A. MICROECONOMICS**

#### **1. Consumer choice**

Preferences and utility. The budget constraint of the consumer. Optimal consumer choice and demand function. The income effect and the substitution effect: Hicks and Slutsky decompositions.

#### **2. Production and costs**

Production function. Return to scale. Cost minimization and conditional input demand. The analysis of the production costs in the short- and long-run.

#### **3. The firm under perfect competition**

Profit maximization of a competitive firm and the supply function in the short- and long-run. Market equilibrium. An analysis of the effects of state regulation (taxes, subsidies, price control, production quotas, import tariffs and quotas, etc.).

#### **4. Monopoly**

Pure monopoly equilibrium. Monopoly with multiple plants. Price discrimination. Monopoly welfare loss. Government regulation of monopoly.

#### **5. Oligopoly**

Nash equilibrium in the Cournot model and in the Bertrand model. Sequential games: the Stackelberg model. Collusion in the oligopolistic market (cartel agreement) and the prisoners' dilemma. The price leader model.

#### **6. Input markets. Pricing in the labor market**

Demand for inputs. The labor demand curve on the competitive market. The market supply curve for labor. Monopsony. Labor Unions.

#### **7. General equilibrium and economic efficiency**

Pareto efficiency (Pareto optimality). The Edgeworth's box diagram. Contract curve. Efficiency in an exchange economy. Equilibrium and Walras's law. The first and the second fundamental theorems of welfare economics. Production efficiency. Production – possibility curve. The marginal rate of transformation. Output efficiency.

## 8. Market failure

Externalities and inefficiencies. Approaches to the problem: regulations, Pigou taxes (subsidies), tradable emission permits, internalization of external effects. Externalities and property rights: the Coase theorem. Public goods. Efficiency condition, free-rider problem.

Information asymmetry. Adverse selection. Market signaling. Moral hazard. Principal-agent problem.

## RECOMMENDED LITERATURE

Pindyck R., Rubinfeld D. Microeconomics. 8th ed. Pearson, 2013.

Varian H. Intermediate Microeconomics: A Modern Approach. 9th ed. W.W.Norton & Company, 2014.

## B. MACROECONOMICS

### 1. Introduction to Macroeconomics. Key Macroeconomic Variables

Key macroeconomic problems. Principles and tools of macroeconomic analysis. The model of circular flows: aggregate product, aggregate expenditures and aggregate income. The basic macroeconomics identity.

Gross domestic product (GDP) and national accounting. Nominal and real GDP. GDP deflator. Consumer price index (CPI). Inflation rate. Unemployment rate. Nominal and real interest rate. Fisher effect.

### 2. Goods Market Equilibrium

Components of aggregate expenditures. Short-run consumption function. Marginal and average propensities to consume. Short-run investment function. Planned and actual aggregate expenditures. The Keynesian Cross. Goods market adjustment to equilibrium. The Paradox of thrift. Recessionary and inflationary output gaps in the Keynesian Cross. Fiscal policy and its instruments. Expenditures multiplier, tax multiplier, balanced budget multiplier. Barro-Ricardo equivalence. Discretionary and rule-based fiscal policy. Budget deficit and national debt.

### 3. Money Market Equilibrium

Money, its functions and types. Motives for holding money. The quantity theory of money and transaction demand for money. The Baumol-Tobin model of money demand. Liquidity preference theory and speculative demand for money. Precautionary demand for money. Money demand function.

Money supply. Monetary aggregates. Money creation by the banking system. Reserves of commercial banks. Deposit and credit multipliers. Central bank and its functions. The monetary base, money stock and money multiplier. Money market equilibrium and the mechanism of its adjustment and recovery.

Monetary policy. Monetary transmission mechanism. Monetary policy and inflation. Inflation expectations. Real effects of inflation. Inflation tax.

#### **4. Simultaneous Goods and Money Markets Equilibrium in Closed Economy: IS-LM Model**

Assumptions. IS curve. LM curve. Simultaneous goods and money markets equilibrium. Adjustments to shocks. Fiscal and monetary policy in the IS-LM model. Fiscal and monetary policy multipliers. Crowding out effect in the closed economy. The IS-LM model as a model of aggregate demand. The aggregate demand (AD) curve and its properties.

#### **5. Short-Run Model of Open Economy: IS-LM-BP Model**

Open economy identities. Balance of payments. Exchange market equilibrium. Nominal exchange rate. Triangular arbitrage. Cross exchange rates. Purchasing power parity (PPP) theories: Absolute PPP, relative PPP. Real exchange rate. Balassa-Samuelson effect.

Uncovered interest rate parity and mechanism of arbitrage. Covered interest rate parity and mechanism of arbitrage.

Fixed and floating exchange rate systems.

Goods market in the open economy. The IS curve in the open economy. Net export.

Financial market in the open economy. The Mundell-Fleming model. Capital mobility in IS-LM-BP model. The balance of payments (BP) curve. Equilibrium in IS-LM-BP model.

Macroeconomic policy in the small open economy under fixed and flexible exchange rates. Various degrees of capital mobility.

#### **6. Aggregate Demand and Aggregate Supply (AD-AS) Model**

Classical approach. Classical dichotomy and neutrality of money. Macroeconomic shocks in the economy of full employment. The Keynesian approach. Macroeconomic shocks in the Keynesian economy. Macroeconomic policy in the Keynesian economy.

#### **7. Labor Market, Natural Rate of Unemployment and Phillips Curve**

Labor market equilibrium and unemployment. Types of unemployment. Natural rate of unemployment. Okun's law.

Short-run Phillips curve and its evolution. Expectations-augmented Phillips curve. Adaptive and rational inflationary expectations. Long-run Phillips curve.

Disinflation policy and its types. Sacrifice ratio.

### **8. Financial Market. Theories of Consumption and Investment**

Intertemporal budget constraints of private and public sectors. No Ponzi game condition. Modigliani-Ando-Brumberg's life-cycle hypothesis of consumption. Friedman's permanent income hypothesis of consumption.

The new classical theory of investment. Accelerator model. Q-Tobin theory of investment. Rational expectations and effective market hypothesis.

Present value and asset pricing. Fundamental value and bubbles.

### **9. Economic Growth and Business Cycle Fluctuations**

Economic growth: Concept and empirical data. Convergence, conditional convergence, club convergence. Divergence.

The Solow growth model. Steady state. Convergence in the Solow model. The "Golden rule" of capital accumulation. Technological progress in the Solow model.

Endogenous growth models. AK-type models. Growing product differentiation models.

Business cycle fluctuations: Stylized facts and modelling. Real business cycle model. Procyclical, countercyclical and acyclical macroeconomic variables. Lags in macroeconomic policy and countercyclical monetary policy.

### **10. Accounting for inflation in macroeconomic models**

Classification of rates, causes and forms in which inflation occurs. Ways to fight inflation. Key features of the inflation triggering mechanism. Hyperinflation dynamics. Stabilization policy of fighting hyperinflation.

Inflation, inflation expectations and aggregate supply curve SAS. Dynamic aggregate demand function DAD. Dynamic adjustment of output and inflation to monetary and fiscal expansion in the DAD-SAS model.

### **Textbooks**

Blanchard O. Macroeconomics. 7th ed. Pearson, 2016.

Abel A., Bernanke B., Croushore D. Macroeconomics. 9th ed. Pearson, 2016.

Mankiw G.N. Macroeconomics. 9th ed. Worth Publishers, 2016.

Dornbusch R., Fischer S., Startz R. Macroeconomics. 12th ed. McGraw-Hill, 2014.

## **C. ECONOMETRICS**

### **1. Elements of probability theory**

**ONE CLICK TO OPEN ALL DOORS**

Random variables and their basic characteristics (expectation, variance, quantile).  
Two-dimensional and multidimensional random variables and their basic characteristics (covariance, correlation).  
Distributions used in econometrics (normal, chi-square, Student's t, Fisher's F).

## 2. Elements of statistics

The basic descriptive statistics for a sample (mean, variance, etc.).  
The basic descriptive statistics for a pair of variables (sample covariance, correlation).

## 3. Algebra of linear regression

Linear regression equation. The meaning of its constituent variables (dependent variable, regressors, coefficients, residuals).  
Least squares fitting. Normal equations. The formula of OLS estimator.  
Goodness of fit and the coefficient of determination.

## 4. Classical linear regression model

Model formulation. The meaning of its constituent variables (dependent variable, regressors, coefficients, errors).  
Assumptions of the classical linear regression model.  
The basic properties of OLS estimator (unbiasedness, the Gauss – Markov theorem).  
Goodness of fit measures for OLS estimator (covariance matrix of coefficients, standard errors of coefficients)  
Dummy variables.  
Interpretation of regression coefficients.

## 5. Hypotheses testing for regression coefficients

Significance testing for an individual regression coefficient using Student's t statistics. P-values. Confidence intervals for individual coefficients.  
Significance testing for the entire regression equation using Fisher's F statistic.

## 6. Violation of the classical linear regression model assumptions

Error heteroscedasticity: consequences and diagnostics.  
Error autocorrelation: consequences and diagnostics.  
Causes and consequences of regressors' endogeneity.

## RECOMMENDED LITERATURE

Stock J. H., Watson M. W. Introduction to Econometrics. 4th ed. – Pearson, 2018.  
Dougherty C. Introduction to Econometrics. 5th ed. – Oxford University Press, 2016.  
Verbeek M. A Guide to Modern Econometrics. 5th ed. – Wiley, 2017.

Wooldridge J. M. Introductory Econometrics. A Modern Approach. 6th ed. – Cengage Learning, 2016.