Topics for the diploma examination in second-cycle studies

ECONOMICS

I. Consumer Theory & Choice
   1. Rational Preferences and Utility Representation (Rational preferences. Axioms on preferences and Debreu's representation theorem. Examples of non-rational preferences.).
   2. Utility Maximization and Indirect Utility (Utility maximization problem, Marshallian demand, and indirect utility function with applications.).
   3. Expenditure Minimization and Hicksian Demand (Expenditure minimization problem, Hicksian demand, and the law of compensated demand.).
   4. Slutsky Decomposition (Substitution and income effects of price changes using the Slutsky equation. Normal and Giffen goods.).
   5. Revealed Preference Theory (Axioms of revealed preference and their applications in consumer demand analysis.).
   6. Aggregation in Consumer Theory (Aggregate demand and the conditions for the existence of a representative consumer.).
   7. Decision-Making under Risk (von Neumann–Morgenstern expected utility theory, its axioms, and measures of risk aversion).
   8. Risk, Uncertainty, and Behavioral Models (Stochastic dominance, paradoxes of expected utility, subjective expected utility, ambiguity, and prospect theory.).

II. Producer Theory & General Equilibrium
   1. Profit Maximization and Cost Functions (Profit maximization and cost function. Its main properties.).
   2. Shephard's Lemma and Duality (Shephard's Lemma and its applications in producer theory.).
   3. Economies of Scale and Aggregate Production (Economies of scale, aggregate production and the existence of a representative firm.).
   4. Efficient Production and Pareto Optimality (Efficient production and Pareto optimality.).
   5. Characterization of Pareto Optima (Pareto optimal allocations via first-order conditions and social welfare maximization.).

6. Walrasian Equilibrium and Welfare Theorems (Walrasian equilibrium in an exchange and production economy. First and Second Welfare Theorems.).

III. Economic Growth & Intertemporal Macroeconomics

1. Solow-Swan Growth Model (Solow-Swan model and its implications for long-run economic growth.).
2. Ramsey-Cass-Koopmans Model (Optimal consumption-saving decisions, fiscal policy, and transversality conditions.).
3. Savings, Discounting, and Intertemporal Choice (Consumption, savings and discounting in growth models.).
4. Steady States and Balanced Growth Paths (Steady state and balanced growth path in macroeconomic models.).
5. Endogenous Growth Theory (Models of endogenous growth and their implications.).
6. Convergence Hypotheses (Unconditional vs. conditional convergence and growth empirics.).
7. Overlapping Generations Models (OLG models and their applications to macroeconomic policy and Ricardian equivalence.).
8. Dynamic Inconsistency and Time Consistency (Dynamic inconsistency of macroeconomic policy and the importance of policy rules.).

IV. Business Cycles, Money, and Policy

1. Stylized Facts of Business Cycles and Growth (Key stylized facts of business cycles and long-run growth.).
2. Consumption Theory and Random Walk Hypothesis (Life-cycle consumption models and the random walk hypothesis.).
3. Monetary Models (Money-in-the-utility and cash-in-advance models of money demand.).
4. Inflation and Monetary Policy (Costs of inflation, stable vs. variable inflation, and the effective lower bound.).
5. Real Business Cycle and New Keynesian Models (Technology shocks and equilibrium efficiency in RBC and NK models.).

6. Nominal Rigidities and Labor Markets (Price and wage rigidity, microfoundations, efficiency wages, and equilibrium unemployment.).
7. Phillips Curve and Expectations (Expectations-augmented Phillips curve and its policy implications.).
8. Fiscal and Monetary Policy Effectiveness (Distortionary vs. neutral taxation and the efficiency of expansionary monetary policy.).

V. Econometrics: Core Methods

1. Least Squares Estimation (Assumptions, properties, and the variance of the OLS estimator.).
2. Endogeneity and Instrumental Variables (Endogeneity, its sources, consequences, and IV estimation requirements.).
3. Multicollinearity, Heteroskedasticity, and Autocorrelation (Problems and their consequences for OLS estimation.).
4. Non-Stationarity and Time Series Relationships (Stationarity, spurious regression, cointegration, and error correction models.).
5. Panel Data Methods (Fixed effects and random effects models. Dynamic panel bias and GMM estimators.).
6. Hypothesis Testing and Policy Evaluation (Hypothesis testing, difference-in-differences, and identification strategies.).

VI. Advanced Econometric Models

1. Limited Dependent Variable Models (Logit, multinomial logit, tobit, and count data models.).
2. Systems of Equations and VAR Models (SEM estimation, identification, VAR and structural VAR models.).

VII. Optimization & Dynamic Methods

1. Static Optimization Techniques (Discuss Lagrangian and KKT methods, first- and second-order conditions, interior and corner solutions.).
2. Dynamic Optimization and Dynamic Systems (Bellman's principle, Bellman equation, Euler equation, backward induction, phase diagrams, steady states, boundary conditions, and contraction mappings.).