

Arguments for the Interview for EPS Admission

Mathematics	Political Science	Economics
<ul style="list-style-type: none"> ▪ Elementary functions ▪ Real functions of one variable and their properties ▪ Limits ▪ Differential calculus ▪ Single variable optimization ▪ Integrals ▪ Introduction to linear algebra 	<ul style="list-style-type: none"> ▪ States and regimes ▪ Determinants of regime emergence and survival ▪ Consequences of regimes ▪ Varieties of dictatorship ▪ Basics of group decision making ▪ Elections and electoral systems ▪ Social cleavages and party systems ▪ Executives, legislatures, courts and federalism 	<p style="text-align: center;"><u>Introduction to microeconomics</u></p> <ul style="list-style-type: none"> ▪ Consumer theory ▪ Producer theory ▪ Market equilibrium in perfect competition <p style="text-align: center;"><u>Introduction to macroeconomics</u></p> <ul style="list-style-type: none"> ▪ Basic concepts ▪ The short run ▪ The medium run ▪ The long run

Arguments for the Interview for EPS Admission – Detailed syllabus and readings

Mathematics

- Elementary functions:
 - Linear function.
 - Quadratic function.
 - Polynomial function.
 - Power function with rational exponent, power function with negative exponent.
 - Trigonometric functions.
 - Exponential functions, logarithms, natural logarithms.

- Real functions of one variable and their properties:
 - Shifting.
 - New function from old.
 - Odd and even functions
 - Inverse function.
 - Composition functions.
 - Convexity and concavity.
 - Increasing and decreasing functions.

- Limits:
 - Properties of the limits.
 - Left and right limits.
 - Special limits.
 - Continuous function.

- Differential calculus:
 - Derivatives and their properties
 - Slope and tangent line.
 - Chain rule.
 - De l'Hôpital theorem.
 - Higher order derivatives.
 - Taylor expansion.
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- Single variable optimization:
 - Weierstrass Theorem.
 - First order conditions.
 - Second order conditions.
- Integrals.
 - Indefinite integrals and definite integrals.
 - Properties of integrals.
 - Methods of integrations.
- Introduction to linear algebra.
 - Vector, matrices, vector operations.
 - Scalar product, matrix-vector multiplication, determinant of a matrix, inverse of a matrix.
 - Solution of linear systems.

Bibliography:

K. Sydsæter, P. Hammond with A. Strøm; Essential Mathematics for Economic Analysis; Pearson, 4th Edition.

Chapters 1-9 and Chapters 15, 16.

Political Science

Knowledge corresponding to an undergraduate textbook's level

- The scientific study of politics
- State and state failures
- Regimes: democracies and dictatorships
- Determinants of regime emergence and survival
- Democratic transitions
- Consequences of regimes
- Varieties of dictatorship
- Basics of group decision making
- Executive-legislative relations in democracies
- Elections and electoral systems
- Social cleavages and party systems
- Legislatures
- Constitutionalism
- Federalism
- Policies and consequences of democratic institutions

Bibliography:

Clark, William Roberts, Matt Golder, and Sona Nadenichek Golder. 2017. *Principles of Comparative Politics*. 3rd ed., London: SAGE

Economics

Introduction to microeconomics

Knowledge corresponding to an undergraduate textbook's level

- Consumer theory: basic concepts and applications with particular reference to:
 - preferences and their properties
 - indifference curves
 - budget constraint
 - optimal consumption and Marshallian demand
 - income and substitution effects
 - elasticity of the demand

- Producer theory: basic concepts and applications with particular reference to:
 - isoquants and isocosts
 - profit maximization and cost minimization
 - different definitions of costs
 - firm supply curve

- Market equilibrium in perfect competition

Reference

Varian H., Intermediate Microeconomics. A Modern Approach, 8th edition, Norton, New York, N.Y., 2009 or previous (but any undergraduate partly formalized book – i.e. with some math and not only words, should work fine)

Introduction to macroeconomics

Knowledge corresponding to an undergraduate textbook's level

- Basic concepts
 - Aggregate output: GDP, Value Added and Income, Nominal and Real GDP
 - The unemployment rate
 - The GDP deflator, the consumer price index, the inflation rate

- The short run
 - The goods market: the determination of equilibrium output, the multiplier.
 - Financial markets: the demand for money, the determination of the interest rate, open market operations
 - The goods and financial markets: the IS-LM model, fiscal and monetary policies, nominal and real interest rates.

- The medium run
 - The natural rate of unemployment and the Phillips curve, the neutrality of money.

- The long run
 - The Solow growth model: the role of capital accumulation; the role of technological progress.

Reference

Blanchard, O.J., Amighini, Giavazzi, F. (2021). Macroeconomics. A European perspective. Pearson (but any undergraduate partly formalized book – i.e. with some math and not only words, should work fine)