University of Rajasthan Jaipur

SYLLABUS

(Three/ Four Year Under Graduate Programme)

BA-Economics

I, II, III & IV Semester

Examination

2025-26

As per NEP-2020

अतिरिक्त कुलसचिव

University of Rajasthan

Department of Economics

Programme Name: UG9102- Four Year B.A (Economics)

The Programme is divided into four parts and each part will consist of two semesters.

Part	Year	Odd Semester	Even Semester
Part-I	First Year	Semester-I	Semester-II
Part-II	Second Year	Semester-III	Semester-IV
Part-III	Third Year	Semester-V	Semester-VI
Part-IV	Fourth Year	Semester-VII	Semester-VIII

Name of University: University of Rajasthan, Jaipur

Name of Faculty: UG9102 -B.A. (Economics)

Name of Discipline: Major-Economics

Programme Prerequisites: Passed 12th Class

Programme Outcomes (POs)

1. Students will be introduced to contemporary economic issues and challenges at both national and global levels, promoting a practical understanding of the discipline's relevance.
2. Students will acquire mathematical and statistical skills essential for economic analysis, enabling them to apply these techniques to solve complex economic problems.
3. Students will develop strong critical thinking and problem-solving skills, allowing them to analyze complex economic problems and propose viable solutions. This ability bridges theoretical understanding with practical applications in real-world scenarios, enhancing employability across various sectors.
4. Students will gain insights into the dynamics of economic development, including the roles of financial inclusion, sustainable development initiatives, and government policies.
5. Students will be trained in primary data collection methods and various sampling techniques, equipping them to gather reliable data for economic research.
6. Students will develop the ability to analyze issues related to economic planning and policy formulation, assessing their impact on national and regional development.
7. The programme establishes the groundwork for advanced concepts in Economics, providing students with a structured framework to model and interpret the behaviors and interactions of households, firms, and government institutions.

Scheme of Examination for the Session 2024-2025

Scheme of the Examination for Practical subjects:

1 Credit = 25 marks for examination/evaluation

Continuous assessment, in which sessional work and the terminal examination will contribute to the final grade. Each course in Semester Grade Point Average (SGPA) has two components- Continuous assessment (20% Weightage) and (End of Semester Examination) EoSE (80% weightage)

1. Sessional work will consist of class tests, mid-semester examination(s), homework assignments, etc., as determined by the faculty in charge of the courses of study.

2. Each Paper of EoSE shall carry 80% of the total marks of the course/subject. The EoSE will be of 3 hours duration.

Part-A of the paper shall have multiple questions of equal marks. This first question shall be based on knowledge, understanding and applications of the topics/texts covered in the syllabus.

Part-B of the paper shall consist of 4 questions with an internal choice of each. The four questions will be set with one from each of the units with internal choice. Third to fourth questions shall be based on applications of the topics/texts covered in the syllabus (60% Weightage) and shall involve solving Problems (40% Weightage) if applicable.

3. 75% Attendance is mandatory for appearing in EoSE.

4. To appear in the EoSE examination of a course/subject student must appear in the midsemester examination and obtain at least a "C" grade in the course/subject.

5. Credit points in a Course/Subject will be assigned only if, the student obtains at least a C grade in midterm and EoSE examination of a Course/Subject.

Scheme of the Examination for Non-Practical subjects:

1 Credit = 25 marks for examination/evaluation

Continuous assessment, in which sessional work and the terminal examination will contribute to the final grade. Each course in Semester Grade Point Average (SGPA) has two components- Continuous assessment (20% Weightage) and (End of Semester Examination) EoSE (80% weightage)

6. Sessional work will consist of class tests, mid-semester examination(s), homework assignments, etc., as determined by the faculty in charge of the courses of study.

7. Each Paper of EoSE shall carry 80% of the total marks of the course/subject. The EoSE will be of 3 hours duration.

Part-A of the paper shall have multiple questions of equal marks. This first question shall be based on knowledge, understanding and applications of the topics/texts covered in the syllabus.

Part-B of the paper shall consist of 2 questions with an internal choice of each. The questions will be set with one from each of the units with internal choice. Third to fourth questions shall be based on applications of the topics/texts covered in the syllabus (60% Weightage) and shall involve solving Problems (40% Weightage) if applicable.

Part-C of the paper shall consist of 4 questions with an internal choice of each. The four questions will be set with one from each of the units with internal choice. Third to fourth questions shall be based on applications of the topics/texts covered in the syllabus (60% Weightage) and shall involve solving Problems (40% Weightage) if applicable.

8. 75% Attendance is mandatory for appearing in EoSE.

9. To appear in the EoSE examination of a course/subject student must appear in the midsemester examination and obtain at least a "C" grade in the course/subject.

10. Credit points in a Course/Subject will be assigned only if, the student obtains at least a C grade in midterm and EoSE examination of a Course/Subject.

Contact Hours 15 Weeks per Semester

L — Lecture: (1 Credit = I Hour/Week)

T — Tutorial: (1 Credit = 1 Hour/Week)

S — Seminar: (1 Credit = 2 Hours/Week)

P — Practical/Practicum: (1 Credit = 2 Hours/Week)

F — Field Practice/Projects: (1 Credit = 2 Hours/Week)

SA — Studio Activities: (1 Credit = 2 Hours/Week)

I — Internship: (1 Credit = 2 Hours/Week)

C — Community Engagement and Service: (1Credit = 2 Hours/Week)

अतिरिक्त कुलसचिव

Exit and Entrance Policy

1. Students who opt to exit after completion of the first year and have secured 48 credits will be awarded a UG Certificate if, in addition, they complete one internship of 4 credits during the summer vacation of the first year. These students are allowed to re-enter the degree programme within three years and complete the degree programme within the stipulated maximum period of seven years.

2. Students who opt to exit after completion of the second year and have secured 96 credits will be awarded the UG diploma if, in addition, they complete one internship of 4 credits during the summer vacation of the second year. These students are allowed to re-enter within a period of three years and complete the degree programme within the maximum period of seven years.

3. Students who wish to undergo a 3-year UG programme will be awarded UG Degree in the Major discipline after successful completion of three years, securing 150 credits and satisfying the minimum credit requirement.

4. A four-year UG Honours degree in the major discipline will be awarded to those who complete a four-year degree programme with 200 credits and have satisfied the minimum credit requirements.

5. Students who secure 75% marks and above in the first six semesters and wish to undertake research at the undergraduate level can choose a research stream in the fourth year. They should do a research project or dissertation under the guidance of a faculty member of the University/College. The research project/dissertation will be in the major discipline. The students, who secure 200 credits, including 12 credits from a research project/dissertation, are awarded UG Degree (Honours with Research).

Letter Grades and Grade Points

Letter Grade	Grade Point	Marks Range (%)
O (outstanding)	10	91-100
A+ (Excellent)	9	81-90
A (Very good)	8	71-80
B+ (Good)	7	61-70
B (Above average)	6	51-60
C (Average)	5	40 – 50
P (Pass)	4	
F (Fail)	0	
Ab (Absent)	0	

When students take audit courses, they may be given a pass (P) or fail (F) grade without anycredit

Semester Wise Paper Titles with Details

Name of Programme: UG9102-B.A.(Economics)								
Subject/ Discipline: Economics								
S No	**Level**	**Semester**	**Type**	**Title**	**CREDITS**			
					L	**T**	**P**	**T**
1	5	I	MJR	UG9102-ECO-51T-101: Introductory Micro Economics	6	0	0	6
2	5	I	MJR	UG9102-ECO-51T-102: Mathematical Methods for Economics-I	6	0	0	6
3	5	II	MJR	UG9102--ECO-52T-103: Introductory Macro Economics	6	0	0	6
4	5	II	MJR	UG9102--ECO-52T-104: Mathematical Methods for Economics-II	6	0	0	6
5	6	III	MJR	UG9102-ECO-63T-201: Intermediate Micro Economics	6	0	0	6
6	6	III	MJR	UG9102-ECO-63T-202: Mathematical Economics	6	0	0	6
7	6	IV	MJR	UG9102-ECO-64T-203: Intermediate Macro Economics	6	0	0	6
8	6	IV	MJR	UG9102-ECO-64T-204: Statistics-I	6	0	0	6

Syllabus

UG9102-B.A. (Economics)
Semester-I: Economics

Type	Paper Code and Nomenclature	Duration of Examination	Maximum Marks (Midterm+ EoSE)	Minimum Marks (Midterm+EoSE)
Theory	UG9102- ECO-51T-101: Introductory Microeconomics	1 Hrs-MT 3Hrs- EoSE	30 Marks- MT 120 Marks- EoSE	12 Marks-MT 48 Marks-EoSE
Theory	UG9102- ECO-51T-102: Mathematical Methods for Economics-I	1 Hrs-MT 3Hrs- EoSE	30 Marks- MT 120 Marks- EoSE	12 Marks-MT 48 Marks-EoSE

Semester	**I**
Code of the Course	**UG9102- ECO-51T-101**
Title of the Course/Paper	**Introductory Micro Economics**
NHEQF Level	**5**
Credit	**6**
Level of the Course	**Introductory**
Type of the Course	**Major**
Delivery Type of the Course	**Lectures**
Objective of the Course	The course is designed to equip students with foundational knowledge of microeconomic tools and techniques, which are widely applied across various fields. These tools will enable the students to understand the resource scarcity by the economic agents.

Course Outcomes

CO1: The unit introduces the basic concepts, nature and subject matter of microeconomics. It is mainly focused on the determinants of price i.e. demand and supply.

CO2: Taking on the demand on priority, the unit analyses the behaviour of a consumer. The focus of the unit remains on the use of microeconomic tools in taking the consumption decisions.

CO3: Supply is as important as demand is, therefore this unit provides details of how the production decisions are taken by the producer. The unit briefly introduces market also.

CO4: This unit introduces the three different type of market structures including monopoly, monopolistic competition and oligopoly. By going through the unit, students would be able to understand the functioning of the market.

Syllabus

UG9102-ECO51T-101: Introductory Microeconomics

Unit-I

Subject matter of Economics: why study economics? scope and methods of economics; the economic problems: scarcity and choice, Opportunity cost; Three problems of economic system: the question of what to produce, how to produce and how to distribute output; Science of economics: positive versus normative analysis. Demand: law of demand, determinants of demand, shifts of demand versus movement along a demand curve; market demand. Supply: law of supply, determinants of supply shifts of supply versus movement along a supply curve, market supply; Market equilibrium. Elasticity and its application, Consumer surplus, Producer surplus. **(25 Lecture)**

Unit-II

The households: The consumption decision, Budget constraint, Concept of utility: Diminishing marginal utility, Diamond-Water paradox, consumption and income/price changes, Demand for all other goods and price changes, Consumer choice: Indifference curve, Properties of indifference curves, Derivation of demand curve from indifference curve and Budget constraint, Consumer equilibrium, Income and substitution effects, Labour supply and saving decisions- choice between leisure and consumption. **(20 Lecture)**

Unit-III

Production: Behaviour of profit maximizing firm, Production process, production functions, Law of variable proportions, Choice of technology, Isoquant and Isocost lines, Costs: Costs in the short run, costs in the long run, Revenue and profit maximization, Minimising losses, short run industry supply curve, economies and diseconomies of scale, producer equilibrium. Perfect competition: assumptions, features, supply curve of a competitive firm, short run and long run equilibrium of a firm/industry. **(25 Lecture)**

Unit- IV

Monopoly: meaning, source, types, assumptions, features, price and output determination in the short run and long run. Monopolistic competition: features, characteristics of monopolistic competition, short run and long run equilibrium of a firm, role of advertising.

Oligopoly: Meaning and features. **(20 Lecture)**

Books Suggested:

1. Bernheim, B., Whinston, M. (2009). Microeconomics. Tata McGraw-Hill.
2. Koutsoyiannis A. (1979) Modern Microeconomics. Macmillan Education.
3. Ahuja, H.L. (2017). Advanced Economic theory, S.Chand and Company, New Delhi.

अतिरिक्त कुलसचिव
विश्वविद्यालय

4 Robert S. Pindyck and Daniel L. Rubinfeld: Microeconomics. Pearson Education Inc.
5. Varian, H.R. (2010). Intermediate microeconomics: A Modern Approach, 8th ed. W. W. Norton.
Additional Resources
6 Mankiw, N. (2007). Economics: Principles and Applications, 4th ed. Cengage Learning.
7. Dominick Salvatore (2002). Microeconomics, Schaum's Outline series, McGraw- Hill Company, Singapore.

Semester	**I**
Code of the Course	**UG9102- ECO-51T-102**
Title of the Course/Paper	**Mathematical Methods for Economics-I**
NHEQF Level	**5**
Credit	**6**
Level of the Course	**Introductory**
Type of the Course	**Major**
Delivery Type of the Course	**Lectures**
Prerequisites	**Nil**
Objective of the Course	The objective of this course is to provide students with understanding of fundamental mathematical concepts essential for economic analysis. Students will learn about set theory, differential calculus, and their economic applications. Integral calculus will be explained with a focus on indefinite and definite integrals, highlighting its relevance in calculating consumer and producer surplus in economics. The course will also cover matrix algebra, including matrix operations and properties, determinants, and methods for solving linear simultaneous equations using matrix inversion and Cramer's rule. This knowledge will equip students with the mathematical tools necessary for advanced economic analysis.

Course Outcomes

1. CO1: Students will comprehend the fundamental concepts of sets, including set notation, types of sets, and the relationships between sets, and will be able to perform various operations on sets and apply the laws of set operations in economic contexts.

2. CO2: Students will understand the concept of derivatives and use of differentiation to determine various elements such as marginal revenue, cost, product, and utility in microeconomic theory and other areas of economics.

3. CO3: Students will understand and apply integration techniques to solve economic problems, particularly in calculating consumer surplus and producer surplus. They will evaluate integrals of various functions and interpret the economic implications of these integrals.

4. CO4: Students will perform matrix operations, understand the properties of different types of matrices, and compute determinants. They will apply matrix algebra to solve systems of linear

equations using matrix inversion and Cramer's rule, and interpret the results in economic analyses.

UG-9102-ECO-51T-102: Mathematical Methods for Economics- I

Unit-I

The concept of Sets, Set notation, relationship between Sets, operation on Sets, laws of Set operations. Relations and Functions, functions and their graphical representations-constant functions, polynomial function and its subclasses, rational functions, algebraic v/s non-algebraic functions, exponential functions, logarithms and logarithmic functions, slope of linear and non-linear functions, functions of two or more independent variables.

(25 Lecture)

Unit-II

Differential Calculus: concept of derivative; rules of differentiation for a function of one variable; rules of differentiation involving two or more functions of the same variable; rules of differentiation involving functions of different variables; derivatives of exponential function and logarithmic functions. First and second order partial derivatives of two independent variable functions. Total differential and total derivatives of functions having more than one independent variable; implicit function and its derivative.

(20 Lecture)

Unit-III

Integral Calculus: Concept of Integration; Indefinite and Definite Integrals and its application in Economics -Consumer surplus and Producer surplus.

(25 Lecture)

Unit-IV

Matrix Algebra and Determinants: Matrices and Vectors, Matrix Operations; Basic principles of Matrix addition and Multiplication, commutative, associative and distributive laws. Type of Matrices and their properties, Determinants- second-order and third order determinants, relation between Minors and Cofactors; Basic properties of Determinants; the Transpose of a Matrix, the Cofactor Matrix, Adjoint of a Matrix, finding the Inverse of a Matrix. Solution of linear simultaneous equations by Matrix Inversion method and Cramer's rule.

(20 Lecture)

Books Recommended:

1. Alpha C. Chiang and Kevin Wainwright, Fundamental Methods of Mathematical Economics, Fourth Edition, Mc Graw Hill International Edition, 2005.
2. Knut Sydsaeter and Peter J. Hammond, Mathematics for Economic Analysis, Low Price Edition, Pearson Education, New Delhi, 2007.

3. Mehta B.C. and G.M.K. Madnani, Mathematics for Economics, Sultan Chand & Sons, New Delhi, 2008.

UG9102-B.A. (Economics)
Semester-II: Economics

Type	Paper Code and Nomenclature	Duration of Examination	Maximum Marks (Midterm+ EoSE)	Minimum Marks (Midterm+EoSE)
Theory	UG9102- ECO-52T-103: Introductory Macroeconomics	1 Hrs-MT 3Hrs- EoSE	30 Marks- MT 120 Marks- EoSE	12 Marks-MT 48 Marks-EoSE
Theory	UG9102- ECO-52T-104: Mathematical Methods for Economics-II	1 Hrs-MT 3Hrs- EoSE	30 Marks- MT 120 Marks- EoSE	12 Marks-MT 48 Marks-EoSE

Semester	**II**
Code of the Course	**UG9102-ECO-52T-103**
Title of the Course/Paper	**UG9102-ECO-52T-104: Introductory Macroeconomics**
NHEQF Level	**5**
Credit	**6**
Level of the Course	**Introductory**
Type of the Course	**Major**
Delivery Type of the Course	**Lectures**
Objective of the Course	This course aims to equip students with a thorough understanding of the principles, theories, and applications of macroeconomic concepts. The objective of this course is to enhance student's understanding of the methods and challenges for measuring key macroeconomic indicators such as GDP, unemployment rates, inflation rates, and interest rates. It introduces major macroeconomic theories and models, including Classical, Keynesian, Monetarist, and New Keynesian perspectives by demonstrating how these theories and models can be broadly applied to analyze economic fluctuations and growth. This course covers national income accounting, consumption function, investment function, the phases of the business cycle, the causes and consequences of economic expansions and recessions, the causes and consequences of inflation and the role of central banks in maintaining price stability. This course will develop the analytical skill necessary for formulating effective economic policies

Course Outcomes:

CO1: This course aims to strengthen the basics of macroeconomics and ideology of major schools of thought on the particular subject. Students will learn the concept of National Income in detail and also get understanding of the process of national income accounting.

CO2: This course will acquaint students with the concept of money and various theories associated with the quantity of money. They will develop a profound understanding of determinants of money supply, process of credit creation and tools of monetary policy which will further help them to analyze the market condition and suitability of monetary instruments.

CO3: This course will enable the students to apprehend the consumption and investment functions. Students will also have insights of various consumption hypotheses and investment theories which further help them to understand the consumption and investment behaviour of individuals in an economy.

CO4: This course will provide a fundamental understanding of the concept of inflation and trade cycles. Students will become aware of the causes, effects and remedial measures for curbing inflation and the concept of Philips curve. Moreover, this will help them to examine the economic fluctuations occurring in an economy and thus they can assist in designing economic policies.

Syllabus

UG9102-ECO-52T-103: Introductory Macroeconomics

Unit-I

Preliminaries: Meaning and definition; Branches of Macroeconomics; microeconomics versus macroeconomics; Uses and limitations of Macroeconomics; static, comparative statics and dynamics; Major Schools of thought in Macroeconomics; Economic Activities; Factors of Production and their rewards; Macro economic variables.

National Income Accounting: Circular flow of National Income in Two and Three Sector Economy; National Income: Concepts, Components and Measurement, Inter-relationship between Three Measures of National Income.

(25 Lecture)

Unit-II

Money and Money Supply: Money- Concept and Functions; Supply of Money: Measurement, Components, and Determinants, High-Powered Money and Money Multiplier; Credit Creation; Tools of Monetary Policy.

Quantity Theory of Money and Demand for Money: Brief description of Classical Quantity theory of Money; Keynesian Demand for Money Theory; Post Keynesian Views of Demand for Money: Baumol-Tobin Model of Transaction Demand for Money, James Tobin's Portfolio Balance Approach and Friedman's Demand for Money Approach. **(20 Lectures)**

Unit-III

Consumption Function: Determinants; Consumption Hypotheses: Absolute, Relative, Permanent and Lifecycle Hypotheses.

Investment Function: Determinants- NPV, MEC, MEC *v/s* MEI, Tobin's Q-Ratio, Accelerator theory of Investment. **(25 Lecture)**

Unit-IV

Inflation: Meaning and Concept, Causes and Types, effects and its social costs; hyperinflation; remedial measures to control inflation, employment-inflation trade- off: concept of Philips's curve.

Trade Cycles: Meaning and phases of trade cycles, Hawtrey's monetary theory, Schumpeter's theory of innovation. **(20 Lectures)**

Books Recommended:

1. Andrew Abel and Ben S. Bernanke. Macroeconomics, Pearson Education Inc.
2. Dornbusch. R, S. Fisher and Richard Startz. Macro Economics, McGraw Hill.
3. Errol D. Souza. Macroeconomics, Pearson Education.
4. M.L. Ahuja, Macroeconomics: Theory and Policy, S. Chand, New Delhi.
5. N. Gregory Mankiw. Macroeconomics, Harvard University worth Publishers.
6. Olivier Blanchard. Macroeconomics, Pearson Education Inc.
7. Richard T. Froyen. Macroeconomics: Theories and Policies, Pearson Education Asia.
8. S.B. Gupta, Monetary Economics: Institutions, Theory & Policy, S. Chand, New Delhi

Semester	II
Code of the Course	UG9102- ECO-52T-104
Title of the Course/Paper	UG9102 – ECO- 52T- 104: Mathematical Methods for Economics-II
NHEQF Level	5
Credit	6
Level of the Course	Introductory
Type of the Course	Major
Delivery Type of the Course	Lectures
Prerequisites	Nil
Objective of the Course	The course aims to equip students with knowledge of optimization techniques and demonstrate to students their applications in economic theory. Students will learn unconstrained optimization for single and multiple-choice variables, and constrained optimization using the Lagrange multiplier method, including conditions for quasi-concavity and quasi-convexity. This course will enable the students for applying these concepts to models such as the Growth Model, Cobweb Model, and the lagged Keynesian macroeconomic model.

Course outcomes

1. CO1: To enable the students to apply first and second order conditions to determine optimum values and points of inflexion for functions with one choice variable.
2. CO2: To enable the students to utilize first and second order conditions to solve optimization problems involving two choice variables, identifying maxima, minima, and saddle points, and analyse conditions for concavity and convexity.
3. CO3: To enable the students to apply the Lagrange multiplier method to solve constrained optimization problems for two choice variables, including evaluating quasi-concavity and quasi-convexity.

4. CO4: To enable the students to solve first and second order homogeneous and non-homogeneous difference equations and apply these techniques to economic models such as the Growth Model, Cobweb Model, and the lagged Keynesian macroeconomic model.

Syllabus

UG9102 – ECO- 52T- 104: Mathematical Methods for Economics-II

Unit-I

Unconstrained Optimization- The case of one choice variable: Optimum Values and Extreme Values: First and Second order conditions for a maxima, minima and point of inflexion; relevant applications.

Unconstrained Optimization-The case of two choice variables: First order and second order conditions for a maxima, minima and saddle point solutions; conditions for concavity and convexity of a function; relevant applications. **(25 Lectures)**

Unit-II

Constrained Optimization by Lagrangian Multiplier Method, the case of two choice variables: first order and second order conditions for constrained maxima and minima; Determinantal test for second order conditions, conditions for quasi-concavity and quasi-convexity of a function.

(20 Lectures)

Unit-III

Difference Equations: Solution of First and Second order homogeneous and non- homogeneous difference equations; Applications on Growth Model, A Cobweb Model, the lagged Keynesian macroeconomic model.

(25 Lectures)

Unit-IV

Differential Equations: Solution of first-order linear differential equations with constant coefficient and constant term: solution of first-order linear differential equations with variable coefficient and variable term.

(20 Lectures)

Books Recommended:

1. Alpha C. Chiang and Kevin Wainwright, Fundamental Methods of Mathematical Economics, Fourth Edition, Mc Graw Hill International Edition, 2005.
2. Geoff, Renshaw, Mathematics for Economics, Oxford University Press, 2011.

3. Jaques, I, Mathematics for Economics and Business, Prentice Hall, 2010.
4. Knut Sydsaeter and Peter J. Hammond, Mathematics for Economic Analysis, Low Price Edition, Pearson Education, New Delhi, 2007.
5. Mehta B.C. and G.M.K. Madnani, Mathematics for Economics, Sultan chand & Sons, New Delhi, 2008.
6. Teresa Bradley and Paul Patton, Essential Mathematics for Economics and Business, Wiley, 2000.

UG9102-B.A. (Economics)
Semester-III: Economics

Type	Paper Code and Nomenclature	Duration of Examination	Maximum Marks (Midterm+ EoSE)	Minimum Marks (Midterm+EoSE)
Theory	UG9102- ECO-63T-201: Intermediate Micro Economics	1 Hrs-MT 3Hrs- EoSE	30 Marks- MT 120 Marks- EoSE	12 Marks-MT 48 Marks-EoSE
Theory	UG9102- ECO-63T-202: Mathematical Economics	1 Hrs-MT 3Hrs- EoSE	30 Marks- MT 120 Marks- EoSE	12 Marks-MT 48 Marks-EoSE

Semester	**III**
Code of the Course	**UG9102- ECO-63T-201**
Title of the Course/Paper	**UG9102- ECO-63T-201: Intermediate Micro Economics**
NHEQF Level	**6**
Credit	**6**
Level of the Course	**Introductory**
Type of the Course	**Major**
Delivery Type of the Course	**Lectures**
Objective of the Course	The emphasis will be on giving conceptual clarity to the students coupled with the use of mathematical tools. This course will enable the students to understand the working of different markets.

Course Outcomes

C01: Students will learn the concept and applications of an indifference curve, how the purchase decisions are made by the consumers by placing preferences vis a vis the budget constraint. The sensitivity of demand to changes in price is also covered.

C02: Students will get an opportunity to understand and appreciate the concept of production function, its types, applications and examine the various tools assisting a producer in making the optimal

decisions regarding production. The different forms of production function will also be examined. They will also get acquainted with different forms of production function.

C03: Students will be familiarized with the relative efficiency of perfect competition and monopoly market and to examine the implications of taxation on these market structures.

C04: Students will get an opportunity to understand the structure and functioning of oligopoly market. It will also enable the students to understand the price and output determination under collusive and non-collusive oligopoly. Students will get an insight into the basic concepts, functioning and determination of factor prices in the factor market.

Syllabus

UG9102- ECO-63P-201: Intermediate Micro Economics

Unit 1

Theory and model Building, commodity bundle, indifference curve and its applications, utility function, Budget set, optimal choice: interior and exterior solution. Decomposition of price effect: Hicksian and Slutsky's method. Slutsky equation, elasticity form, important results and its implications.

(25 lectures)

Unit II

Production Function: short run and Long Run. Law of returns and Returns to Scale. Ridge lines, Expansion Path. Isoclines, forms of Production Function: Cobb- Douglas, Fixed Coefficient and CES.

(20 lectures)

Unit III

Relative efficiency of competitive and monopoly markets; effect of taxation, Oligopoly market structure: kinked Demand curve, Cartel and Price leadership.

(25 lectures)

Unit IV

Input Markets: Basic concepts (derived demand, productivity of an input, marginal productivity of an input, marginal revenue product, value of marginal product); demand for labour; input demand curve; shifts in input demand curve; supply curve, determination of wage, competitive labour market.

(20 lectures)

References

1. Bernheim, B., Whinston, M. (2009). Microeconomics. Tata McGraw-Hill.
2. Koutsoyiannis A. (1979) Modern Microeconomics. Macmillan Education.
3. Osborne, M. (2004). An introduction to game theory. Oxford University Press.
4. Robert S. Pindyck and Daniel L. Rubinfeld: Microeconomics. Pearson Education Inc.
5. Snyder, C., Nicholson, W. (2010). Fundamentals of microeconomics. Cengage Learning.

6. Varian, H. (2010). Intermediate microeconomics: A modern approach, 8th ed. W. W. Norton.

Semester	**III**
Code of the Course	**UG9102- ECO-63 T-202**
Title of the Course/Paper	**UG9102- ECO-63 T-202: Mathematical Economics**
NHEQF Level	**6**
Credit	**6**
Level of the Course	**Introductory**
Type of the Course	**Major**
Delivery Type of the Course	**Lectures**
Objective of the Course	This course aims to broaden and deepen students' exposure to calculus and its application in economic analysis, demonstrating how differentiation is utilized to formulate and analyze economic problems. It will equip students with the necessary skills to solve common mathematical challenges encountered in economic modeling, while developing proficiency in translating complex economic issues into mathematical models and refining their problem-solving abilities. The students will apply economic theories and mathematical techniques such as linear programming and game theory to real-world economic problems.

Course outcome:

1. CO1: Students will acquire a deep understanding of consumer behaviour, firm behaviour, and strategic interactions in markets through game theory. They will also gain a solid understanding of consumer and firm behaviour theories, including utility maximization, elasticity of demand, and production function analysis.

2. CO2: Students will gain practical experience in applying mathematical tools such as linear programming to formulate and solve complex economic problems. They will understand the

practical implications of the simplex method, dual and primal aspects, and duality theorems in optimizing economic outcomes and resource allocation.

3. CO3: The students will learn about the production functions such as Cobb-Douglas and CES, derive input demand functions from profit maximization exercise and short and long-run cost functions.

4. CO4: The critical thinking abilities and problem-solving skills of the students will be enhanced. They will be able to critically evaluate economic scenarios, make informed decisions based on economic models, and propose strategic solutions to economic challenges.

Syllabus

UG9102- ECO-63 T-202: Mathematical Economics

Unit - I

Theory of Consumer Behaviour - Convex and concave functions, Properties of an Indifference Curve; proof of Convexity of indifference cure, Engel aggregation condition, Cournot aggregation condition, constrained Utility optimization, Nature of commodity, Demand Functions: Ordinary and Compensated, Price and Income Elasticity. Slutsky Equation - 2-commodities case, Elasticity Form and Important Results. Income and leisure: Derivation of Labour Supply Function and its properties. **(25 lectures)**

Unit- II

Theory of Firm- Production Function, Properties of a Well Behaved and Homogenous Production function: Cobb-Douglas and CES Production Functions, Output Elasticity of labour and capital. Elasticity of Substitution, Homogenous Production Function. Cobb- Douglas, CES production Function. Expansion path; Optimization Behaviour of a Firm- Constrained Cost Minimization, Constrained Output Maximization and Profit Maximization. **(20 lectures)**

Unit-III

Input Demand Functions- Properties and Derivation of Producers Input Demand Functions (through profit maximization): Cost Functions-Properties and Derivation of Short run and Long run Cost Functions (through profit maximization), Cobweb model **(25 lectures)**

Unit-IV

Input–output analysis: Input-out transaction table, technological coefficient matrix, Solution of Open input–output model, Derivation of closed input-out model, Hawkins-Simon conditions, assumptions and application of input-output model in Economic Planning.

Game theory- basic terminology, zero and constant sum games of two persons, solution of game with pure and mixed strategy, Principle of dominance

Linear Programming- Definition and basic concepts of LPP, main ingredient of LPP. Graphical method, Solving LPP maximization problems using the simplex method. Dual and primal, Duality theorems.

(20 lectures)

Note: Use of non-programmable calculator is permitted.

Books Recommended:

1. J.M. Henderson and R.L. Quantt: Micro Economic Theory: Approach, McGraw- Hill London.
2. RGD Allen, Mathematical Economics, Macmillan
3. B.C. Mehta: Mathematical Economics: Micro Economic Models, Sultan Chand & Sons, New Delhi.
4. Alpha C Chiang: Fundamental Methods of Mathematical Economics, MacGraw- Hill, Kagakusha, Tokyo.

UG9102-B.A. (Economics)
Semester-IV: Economics

Type	Paper Code and Nomenclature	Duration of Examination	Maximum Marks (Midterm+ EoSE)	Minimum Marks (Midterm+EoSE)
Theory	UG9102- ECO-64T-203: Intermediate Macro Economics	1 Hrs-MT 3Hrs- EoSE	30 Marks- MT 120 Marks- EoSE	12 Marks-MT 48 Marks-EoSE
Theory	UG9102- ECO-64T-204: Statistics-I	1 Hrs-MT 3Hrs- EoSE	30 Marks- MT 120 Marks- EoSE	12 Marks-MT 48 Marks-EoSE

Semester IV

Semester	**IV**
Code of the Course	**UG9102-ECO-64T-203**
Title of the Course/Paper	**UG9102-ECO-64T-203: Intermediate Macro Economics**
NHEQF Level	**6**
Credit	**6**
Level of the Course	**Introductory**
Type of the Course	**Major**
Delivery Type of the Course	**Lectures**
Objective of the Course	This course aims to provide students with comprehensive knowledge of key macroeconomic concepts, including income, money, interest rates, inflation, and unemployment, among others. After completion of this course students will be able to establish connections between major macroeconomic variables. Mastery of these concepts will enhance their employability, as these principles form the foundation of the market.

Course Outcomes

CO1: The unit broadens students' understanding of income by expanding their knowledge from an individual's income to the concept of aggregate income.

CO2: The unit aims to provide to the students, a detailed analysis of money and inflation, with a primary focus on the relationship between money growth and inflation in the economy.

CO3: Employment and income are central to the study of macroeconomics. The current unit presents to the students, foundational theories of these concepts- the Classical and Keynesian theories.

CO4: The counterpart of employment is unemployment, which is equally significant. This unit provides to the students, a detailed examination of unemployment as an economic concept, including its various forms.

Syllabus

UG9102-ECO-64T-203: Intermediate Macro Economics

Unit I

Aggregate income and its dimensions: income and welfare, omissions in the measurement of aggregate income. Measuring output: connecting output with income, Aggregate income categories. Real and Nominal incomes. **(25 Lectures)**

Unit II

The quantity theory of money: Transactions and the quantity equations, The money demand function and quantity equation, constant velocity. Inflation: Inflation and money growth, inflation and interest rates (i.e. Real and Nominal), The Fisher effect. The nominal interest rate and the demand for money.

(20 Lectures)

Unit III

The classical theory of income and employment: complete classical model, Neutrality of money, Keynes's critique of classical theory. Keynes's theory of employment: complete Keynesian model, principal of effective demand, Keynes's money wage rigidity model. Policy implications of Keynes's theory of employment and income. Concept and working of Multiplier: The Keynesian explanation of the Great Depression. **(25 Lectures)**

Unit IV

Integration of Product and Money Market Equilibrium: Derivation of IS-LM curves, General Equilibrium, Shift in IS and LM Curves. Natural rate of unemployment and frictional unemployment, real wage rigidity and structural unemployment. Aggregate Demand - Aggregate Supply Model (With

Rj / Jas

Price Flexibility): Derivation of AD-AS curves and macroeconomic equilibrium with AD-AS curves. Understanding time horizons in macroeconomics using AD-AS. **(20 Lectures)**

Books recommended:

1. Dornbusch, R.; S. Fisher and Richard Startz, Macro Economics, MacGraw Hill.
2. H.L.Ahuja, Macroeconomics: Theory and Policy, S.Chand, New Delhi.
2. Errol D'Souza, Macroeconomics, Pearson Education.
3. Richard T. Froyen, Macro Economics: Theories and Policies, Pearson Education.
4. P. Edgemond, Macroeconomics, CBS Publishers, New Delhi.
5. Gregory Mankiw, Macroeconomics, CBS Publishers, New Delhi.
6. Roben J.Gorden, Macroeconomics, Harper Collins.
8. S.B.Gupta, Monetray Economics: Institutions. Theory & Policy, S.Chand, New Delhi.

Semester	IV
Code of the Course	UG9102-ECO-64T-204
Title of the Course/Paper	UG9102-ECO-64T-204: Statistics-I
NHEQF Level	6
Credit	6
Level of the Course	Introductory
Type of the Course	Major
Delivery Type of the Course	Lectures
Objective of the Course	This course aims to equip students with essential statistical tools and techniques necessary for economic analysis. The objective of the course is to provide students comprehensive understanding of statistical methods, preparing them to analyze data and draw meaningful conclusions with a particular focus on data collection techniques, classification, tabulation and analysis of data. It provides a clear understanding of fundamental statistical concepts such as probability, sampling distributions, hypothesis testing and estimation. It enhances students' understanding regarding application of appropriate statistical tool economic situations. This course introduces regression and time-series analysis highlighting relevance of these tools in predicting future values.

Course Outcome

1. CO1: Students will learn the data collection techniques and frequency distributions.
2. CO2: Students will learn to calculate and interpret statistical averages (mean, median, mode) and measures of dispersion (variance, standard deviation) and skewness.
3. CO3: Students will learn how to use inferential techniques such as hypothesis testing, confidence intervals, and regression analysis to draw about population from sample data.

4. CO4: Students will learn to evaluate statistical claims, to identify appropriate statistical methods for analysing the different types of data and to apply them for solving real-world problems

Syllabus

UG9102-ECO-641-204: Statistics-I

Unit I

Statistics-Introduction and Applications. Data Collection Techniques. Frequency Distributions: Discrete and Continuous, Measures of Central Tendency: Arithmetic Mean, Geometric Mean and Harmonic Mean (Simple and Weighted), Mode, Median and Partition Values. **(25 Lectures)**

Unit II

Measures of Dispersion, Skewness and Kurtosis. Simple Correlation: Significance of the study of Correlation, Karl Pearson's Coefficient of Correlation, Properties of the coefficient of Correlation, Spearman's Rank Correlation, Coefficient of Correlation and Probable Error. **(20 Lectures)**

Unit III

Simple Regression Analysis: Applications of Regression, Fitting of Regression Lines by Ordinary Least Squares Method, Determination of Regression Coefficients, Limitation of Regression Analysis. Analysis of time series and forecasting. **(25 Lectures)**

Unit IV

Index number, Interpolation (Binomial Expansion and Newton's Method). Testing of hypothesis: Introduction, Types of Error, Level of Significance, Critical Region, Standard Error and Sampling Distribution. **(20 Lectures)**

Books recommended:

1. S.P. Gupta. Statistical Methods, Sultan Chand Sons, New Delhi.
2. M.R. Spiegel. Theory and Problems of Statistics, McGraw Hill Books, London.
3. S.C. Gupta and V.K. Kapoor. Fundamentals of Applied Statistics, S Chand and sons, New Delhi.
4. Salvator, D. Mathematics and Statistics, Schaum's Series, Tata McGraw Hill.
5. G. S. Monga. Mathematics and statistics for Economics, Vikas Publishing House, New Delhi.
6. K. N. Nagar. Fundamentals of Statistics, Meenakshi Prakashan, Meerut.