

Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

B.A. Pass Course

SEMESTER V

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment t*	END SEM University Exam	Teachers Assessment t*
BA505	Compulsory	Economic Growth and Development	5	-	-	5	60	20	20	-	-

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit; Q/A – Quiz/Assignment/Attendance, MST Mid Sem Test.

Course Objectives:

- Give an understanding of the theoretical perceptions of economic growth and development together with the forces bringing about them.
- Broaden the awareness of the challenges in the developmental process and thus motivate the students towards the thought process of alternative solutions.

Course Outcomes:

- Describe the nature and meaning of economic development or underdevelopment, both in general, and as applied to people in specific developing countries
- Illustrate how economics can be used to create or analyze alternative approaches to promote development
- Explain the major development problems, choices and opportunities currently faced by developing countries

BA505

Economic Growth and Development

UNIT I : Economic Growth and Development

Economic growth and development: Meaning, definitions, distinction, factors determining-economic and non-economic, Obstacles of development-vicious circles of poverty; Measures of development in relation to GNP, PQLI, HDI;; sustainable

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development. World Development Report – Estimation of HDI, PCI, GDI GEI indices.

UNIT II : Theories of Growth

Classical growth models -Adam Smith; David Ricardo; Gunnar Myrdal's Theory of Backwardness and Spread Effect; Big Push theory; Critical Minimum Effort Thesis, Rostow's Stages of Economic Growth.

UNIT III: Approaches of Economic Development

Classical Theory, Schumpeter- Balanced and Unbalanced Growth; Circular causation, Low income equilibrium trap. Critical Minimum Hypothesis, Theories of Dualism - Lewis Model.

UNIT IV: Human Resource and Economic Development

Concept of intellectual capital and Human resource development; Population problem and growth pattern of population; Theory of demographic transition.

UNIT-V Theories of Development

Mahalanobis Model, Leibenstien's Model, Nurkse and Lewis model, Sustainable Development, Inclusive Growth.

Text Books:

- Jhingan M.L.(2005), *The Economics of Development and Planning*, Vrinda Publications, Delhi.
- Lekhi, R K(2010), *The Economics of Development and Planning*, Kalyani Publishers, Delhi.

Reference Books:

- Ghatak, S.(1986), *An Introduction to Development Economics*, Allen and Unwin, London.
- Higgins, Benjamin(1968), *Economic Development*, W. W. Norton & Company. Inc. New York.
- Meier, G.M.(1995), *Leading Issues in Economic Development*, Oxford University Press, Delhi.
- Ray, D.(1998), *Development Economics*, Princeton University Press, Princeton NJ.

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- Taneja M.L. and R. M. Myer (1995), *Economics of Development and Planning*, Shoban Lal Nagin Chand and Co, Delhi.
- Thirlwall A.P (2003), *Growth and Development* - With Special reference to Developing Economies, Palgrave Macmillan, New York
- Todaro, M.P. and S.C. Smith (2006), *Economic Development*, Pearson, London

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM	MST	Q/A	END SEM	Q/A				
BSST501	DC	Applied Statistics	60	20	20	50	-	3	1	2	6

Course Objective

To introduce the students with the Fundamentals of the Applied Statistics

Course Outcomes

After the successful completion of this course students will be able to:

- 1. know the concepts of vital statistics.*
- 2. know and apply various types of Index number on the data.*
- 3. observe the variation in data through Time series.*
- 4. know about the concept of demand analysis.*

Course Content:

UNIT I

Vital Statistics: Introduction, uses of vital Statistics method of obtaining vital -Statistics: -- Registration method, census-method, Measurement of Mortality: Crude death rate, Standardized death rates, Age specific death rates, with their relative merits and demerits. Infant Mortality rate. Complete life table and its main components, Uses of life table.

UNIT II

Stationary and stable population, Latka and Dublin's model for stable population. Central mortality rate, force of mortality. Measurement of Fertility rates: Crude birth rate, (age specific birth rate, general fertility rate, total fertility rate, with their merits and demerits. Measurement of Population Growth rates: Crude rare of natural increase and Pearle's vital index, Gross reproduction rate (GRR), Net reproduction rate (NRR).

UNIT III

Index Numbers: Introduction, definition, Problems in constructing Index numbers, Price, quantity and volume relatives, Link and chain relatives, computation of index numbers: Laspeyre's. Paasche's. Marshall Edgeworth's and Fisher's index numbers; chain base index number, criteria of a good index number, cost of living Index number.

UNIT IV

Time series: introduction, components of time series, mathematical models for time series, uses of time series, measurement of trends: Graphical method, Method of semi averages, Method of moving average, Method of least squares. Growth curves and their fitting Modified exponential curve and its fitting. Methods of determination of seasonal variation.

UNIT V

Demand Analysis; Introduction, Definition of demand and supply, laws of supply and demand, price elasticity of demand, price elasticity of supply, types of data required for estimating elasticity. Pareto's law of income distribution, curve of concentration, (Lorenz curve and estimation of elasticity from time series data) , log normal distribution.

Suggested Reading:-

1. Mukhopadhyay, P. : Applied Statistics, new Central Book Agency Pvt. Ltd., Calcutta.
2. Srivastava O.S. : A Text Book of Demography, Vikas Publishing House, New Delhi.
3. Goon A.M., Gupta M.K. and Dus Gupta B. ; Fundamentals of Statistics. Vol. II, World Press, Calcutta.
4. V. K. Kapoor and S. C. Gupta : Fundamental of Applied Statistics, Sultan Chand and Co
5. Chatfield, C.: The analysis of Time series, Chapman and Hall.

List of Practical:

1. Fitting and plotting of modified exponential curve.
2. Fitting and plotting of Gompertz curve.
3. Fitting of trend by Moving Average Method
4. Measurement of seasonal indices Link Relative method
5. To calculate CDR and Age Specific death rate for a given set of data
6. To find Standardized death rate by:- (i) Direct method (ii) Indirect method
7. To construct a complete life table

8. To fill in the missing entries in a life table.
9. To calculate CBR, GFR, SFR, TFR for a given set of data
10. Calculate GRR and NRR for a given set of data and compare them
11. To calculate the Laspeyre's Index number.
12. To calculate the Paasche's Index number.
13. To calculate the Fisher's index number.
14. To find the demand analysis in the given data.

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM	MST	Q/A	END SEM	Q/A				
BSMA 504	DC	Numerical Methods & Linear Programming	60	20	20	-	-	3	1	-	4

Course Objective

To introduce the students with the Fundamentals of the Numerical Methods & Linear Programming

Course Outcomes

After the successful completion of this course students will be able to:

- 1. understand and solve problems of the straight lines in 3D.*
- 2. solve the problems of the planes.*
- 3. know the solution of the problems of the spheres.*
- 4. understand and apply the concepts of the algebra of the Right circular cone.*

Course Content:

UNIT – I

Approximate numbers, Significant figures, Rounding off numbers. Error – Absolute, Relative and Percentage. **Operators** - Δ , ∇ and E (Definitions and some relations among them). **Interpolation** : The problem of Interpolation, Equispaced arguments –Difference Tables, Deduction of Newton's Forward Interpolation Formula. Remainder term (expression only). Newton's Backward Interpolation formula (statement only) with remainder term. Unequally – spaced arguments –Lagrange's Interpolation Formula (statement only). Numerical problems on Interpolation with both equi- and unequally-spaced arguments.

UNIT – II

Number Integration: Trapezoidal and Simpson's $\frac{1}{3}$ rd formula (statement only). Problems on Numerical Integration. **Numerical Solution of Equation:** To find a real root of an algebraic or transcendental equation. Location of root (Tabular method), Bisection method. Newton-Raphson method with geometrical significance. Numerical problems.

UNIT – III

Linear Programming: Motivation of Linear Programming problem. Statement of L.P.P. formulation of L.P.P. Slack and Surplus variables. L.P.P. in matrix form. Convex set, Hyperplane, Extreme points, Convex Polyhedron, Basic solutions and Basic Feasible Solutions (B.F.S.) Degenerate and Non-degenerate B.F.S. The set of all feasible solutions of an L.P.P. is a convex set. The objective function of an L.P.P. assumes its optimal value at an extreme point of the convex set of feasible solutions. A B.F.S. to an L.P.P. corresponds to an extreme point of the convex set of feasible solutions.

UNIT – IV

Fundamental Theorem of L.P.P. (Statement only). Reduction of a feasible solution to a B.F.S. Standard form of an L.P.P. Solution by graphical method (for two variables), by simplex method and method of penalty. Concept of duality. Duality theory. The dual of the dual is the primal. Relation between the objective values of dual and the primal problems. Dual problems with at most one unrestricted variable, one constraint of equality.

UNIT – V

Transportation and Assignment problems and their optimal solutions.

Texts:

1. Numerical methods – E. Balagurusamy (Tata McGraw Hill).
2. Introduction to numerical analysis – F. B. Hilderbrand (TMH Edition).
3. Numerical Analysis – J. Scarborough.
4. Introduction to numerical analysis – Carl Erik Froberg (Addison Wesley Publishing).
5. Numerical methods for science and engineering – R. G. Stanton (Prentice Hall).
6. Linear Programming : Method and Application – S. I. Gass.
7. Linear Programming – G. Hadley.
8. An Introduction to Linear Programming & Theory of Games – S. Vajda.

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			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM	MST	Q/A	END SEM	Q/A				
BSMA505(A) BSST502	DC	Elective-I Group A: Analytical Dynamics Group B: Game Theory	60	20	20	-	-	3	1	-	4

(1) Analytical Dynamics

Course Objective

To introduce the students with the Fundamentals of the Analytical Dynamics

Course Outcomes

After the successful completion of this course students will be able to:

- 1. understand and solve problems of the motion of a particle.*
- 2. solve the problems of the motion under forces.*
- 3. understand and apply the concepts of the motion in 2D.*

Course Content:

UNIT – I

Velocity and Acceleration of a particle. Expressions for velocity and acceleration in rectangular Cartesian and polar co-ordinates for a particle moving in a plane. Tangential and normal components of velocity and acceleration of a particle moving along a plane curve.

UNIT – II

Concept of Force: Statement and explanation of Newton's laws of motion. Work, power and energy. Principles of conservation of energy and momentum. Motion under impulsive forces. Equations of motion of a particle (i) moving in a straight line, (ii) moving in a plane.

UNIT – III

Study of motion of a particle in a straight line under (i) constant forces, (ii) variable forces (S.H.M., Inverse square law, Damped oscillation, Forced and Damped oscillation, Motion in an elastic string). Equation of Energy. Conservative forces.

UNIT – IV

Motion in two dimensions : Projectiles in vacuo and in a medium with resistance varying linearly as velocity. Motion under forces varying as distance from a fixed point.

UNIT – V

Central orbit. Kepler's laws of motion. Motion under inverse square law.

Texts:

1. An Elementary Treatise on the Dynamics of a Particle & of Rigid bodies – S. L. Loney (Macmillan).
2. Dynamics of Particle and of Rigid Bodies – S. L. Loney.

(2) Game Theory

Course Objective

To introduce the students with the Fundamentals of the Game Theory

Course Outcomes

After the successful completion of this course students will be able to:

1. *understand the basic terminology in game theory.*
2. *solve the problems of game to find the optimal solution.*
3. *know the graphical solution of the game problem.*
4. *Know the solution of general game by algebraic method.*
5. *understand and apply the concepts of linear programming to solve the two person zero sum game problem.*

Course Content:

Unit 1

Definition and explanation of some important Term in games. Characteristic of game theory. Major limitation of game theory. Co-operative and Non co-operative games, zero-sum & non-zero-sum games. Examples Types of strategies: pure strategies and mixed strategies. Maximin and minimax principles. Fundamental theorem of game.

Unit II

Saddle point (Equilibrium) point, rules of determining a saddle point. Optimal strategies and value of the game. (2×2) two –person zero-sum without saddle points, value of a game, fair and strictly determinable games.

Unit III

Concept of dominance in games, Inferior and superior strategies, dominance property. Generalized dominance property. Reduction of size of game. Graphical method for $(2 \times n)$ and $(m \times 2)$ games. A short cut method for $(n \times n)$ games.

Unit IV

Algebraic method for the solution of a general Game. Iterative method for approximate solution of a game. Symmetric games.

Unit V

Linear Programming, Canonical and standard forms. Simplex method. Duality in linear programming, principles of duality. Importance of duality. Solution of two-person, zero-sum game by transforming into linear programming. Prisoner's dilemma (Examples). Elementary concept of Shapley value and nucleolus in games. Some applications of the games.

Texts:

1. Operation Research, by: W.L. Winston, Thomson Publishers
2. Mathematical Methods and Theory in Games, Programming and Economics, by: S. Karlin, Dover Publications, Mineola, NY
3. Game Theory, by: G. Owen, 3rd Ed., Academic Press, San Diego, 1995
4. Game Theory, by: D. Fudenberg and J. Tirole, MIT Press, Cambridge
5. Mathematical Programming Techniques, by: N.S. Kambo, Affiliated East-West Press (1984)

Game Theory: Analysis and Conflicts, by: R.B. Meyerson, Harvard Univ. Press, Cambridge, MA 1991.