1. Population Studies

Course Objectives

1. To enable the students to identify appropriate sources of data, perform basic demographic analysis using various techniques and ensure their comparability across populations.
2. To acquire knowledge about the construction of life table and its applications in demographic analysis.

Course Outcomes (CO)

Upon successful completion of this course the student will be able to

CO1. Study the concepts of Vital Statistics, sources of data, different measures of Fertility, Mortality and migration.

CO2. Understand the Growth rates- GRR and NRR and their interpretations.

Pedagogy

1. The course is taught using traditional chalk and talk method using problem solving through examples and exercises.
2. Students are encouraged to use resources available on open sources.

Contents

UNIT-1: Introduction and Sources of Population Data **14 hours**

History, definition, nature and scope of population Studies. Sources of population data – salient features of Census, Civil Registration System, National Sample Surveys, Demographic Surveys, relative merits and demerits of these sources. Coverage and content errors. Use of balancing equations, Chandrasekar-Deming formula to check completeness of vital registration data, use of Whipple's, Myer's and UN indices.

UNIT-2 : Fertility, Mortality **14 hours**

Basic concepts and terms used in the study of fertility. Measures of fertility- Crude Birth Rate (CBR), General Fertility Rate (GFR), Age Specific Fertility Rate (ASFR), Total Fertility Rate (TFR), Birth order statistics, Child Women ratio. Measures of reproduction- Gross Reproduction Rate (GRR)and Net Reproduction rate(NRR). Measurement of population growth rate- simple growth rate and compound growth rate.

Basic concepts and terms used in the study of mortality. Measures of mortality- Crude Death Rate (CDR), Age Specific Death Rate (ASDR), Direct and Indirect Standardized Death rates, Infant Mortality Rate (IMR), Under-five mortality Rate, Neo-natal mortality rate, Post-natal mortality rate; Maternal Mortality Rate (MMR).

UNIT-3: Life tables and Population change **14 hours**

Life tables: Components of a life table, force of mortality and expectation of life table, types of life tables. Construction of life tables using Reed-Merrell's method, Greville's method. Uses of life tables.

Basic concepts and definition of population change, migration. Types of migration- internal and international, factors affecting migration. Rates and ratios of Migration-Indirect measures of net-internal migration, national growth rate method, residual method, push-pull factors Population estimates and projections.

References

1. Barclay, G, W(1968). Techniques of Population Analysis, John Wiley and Sons, Incs. New York/London.
2. Keyfitz, H (1968). Introduction to the Mathematics of Population. Addison-Wesley Publishing Co.
3. Pathak, K.B and Ram, F (1991).Techniques of Demographic Analysis, Himalaya Publishing House.
4. Ramakumar. R (1986). Technical Demography, Wiley Eastern Ltd.
5. Srinivasan. K (1998). Basic Demographic Techniques and Applications, Sage Publication, New Delhi.
6. Wunsch G.J. & M.G. Tarmota(1978). Introduction to Demographic Analysis, Plenum Press, N.Y.

B.A. Semester I

BA APPLIED STATISTICS

Title of the Course: OEC-1: Statistics in Competitive Examinations

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures/Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
OEC	OEC-1	Theory	03	03	42 hrs	2hrs .	40	60	100

Course Outcomes (CO)

After the successful completion of the course, the students will be able to

1. Develop the data analysis skills required for Competitive Examinations.
2. Analyze statistical data graphically using frequency distributions and cumulative frequency distributions.
3. Analyze statistical data using measures of central tendency, dispersion.
4. Knowledge to conceptualize the probabilities of events including classical, frequentist and axiomatic approach. Simultaneously they will learn the notion of conditional probability including the concept of Bayes' Theorem.

OEC-1: Statistics in Competitive Examinations	42
Unit –1 Introduction to Statistics and Univariate Data Analysis	18
Definition and scope of Statistics. Presentation: tabular and graphic, including histogram and ogives. Concepts of population and sample. Sampling from finite population - Simple random sampling, Stratified and systematic random sampling procedures (definitions and methods only). Concepts of sampling and non-sampling errors. Partition values-definition and types of partition values: quartiles, deciles and percentiles. Measures of Central Tendency Types of measures of central tendency. Arithmetic mean, Median, Mode, Geometric mean and Harmonic mean - definition, merits and demerits. Properties of arithmetic mean. Empirical relation between mean median and mode. Problems on both grouped and ungrouped data for all the measures. Meaning and objectives of measures of dispersion. Essentials of a good measure of dispersion, absolute and relative measures of dispersion. Types of measures of dispersion- Range, Quartile deviation, Mean deviation and standard deviation with relative measures.	

Unit - 2 : Aptitude Ability and Reasoning	14
Area, Banker's Discount, Surds and Indices, Ratio and Proportion, Simple Interest, Problems on Trains, Profit and Loss, Compound Interest. Reasoning: Number series, Analogy, Classifications, Blood relations Coding-decoding, Puzzle test, Logical Venn diagram. Alphabet-test, Alpha-numerical sequence puzzle, Mathematical operations, Numbers, ranking & time sequence test, Logical sequence test, Arithmetical operations.	
Unit - 3 Probability	10
Probability: Random experiment, sample space, events, mutually exclusive, equally likely and exhaustive events. Classical, statistical and axiomatic definitions of probability, addition and multiplication theorems, Bayes theorem (only statements). Simple numerical problems.	

References

1. Aggarwal R.S., Quantitative Aptitude: by, Publication by S, Chand
2. Freedman, D., Pisani, R. and Purves, R. (2014), Statistics, 4th Edition, W. W. Norton & Company.
3. Gupta S. C. Fundamentals of Statistics, Himalaya Publishing House, Bombay.
4. Gani S. G., Sankhyshastra and Ganakayantra. Udaya Ravi Publications, Bijapur.

GENERIC ELECTIVE (GE 1E) IN APPLIED STATISTICS

B.A. Semester – V

Statistics for Competitive Examinations

Unit I Collection Classification and Presentation of Statistical Data:

Primary and Secondary data, Methods of data collection; Tabulation of data; Graphs and charts; Frequency distributions; Diagrammatic presentation of frequency distributions **(6 hours)**

Unit II Measures of Central Tendency:

Common measures of central tendency – mean median and mode; Partition values- quartiles, deciles, percentiles. **(7 hours)**

Unit III Aptitude Ability:

Area, Banker's Discount, Surds and Indices, Ratio and Proportion Simple Interest, Problems on Trains, Profit and Loss, Compound Interest. **(8 Hours)**

Unit IV Reasoning:

Number series, Analogy, Classifications, Blood relations Coding-decoding, Puzzle test, Logical Venn diagram. Alphabet-test, Alpha-numerical sequence puzzle, Mathematical operations, Numbers, ranking & time sequence test, Logical sequence test, Arithmetical operations. **(9 Hours)**

Books for **Reference:**

1. **Computer Application in Business:**by T D Malhotra.KalyaniPubkishers, New Delhi.

2. Kothari, C.R. (2009): Research Methodology: Methods and Techniques, 2nd RevisedEdition reprint, New Age International Publishers.

Department of Statistics.
Syllabus for OEC
Class: B.Com. III Sem & B.A. III Sem

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