

B.A. First Year – Semester I**Subject / Course Name: Statistics GOEC****Syllabus: Vertical c, Statistics OE1 Elements of Statistics****Course Objectives:**

After completing this course students will be able to,

1. Understand the basic concepts of data and probability.
2. Learn to apply concept of probability in real life situations.
3. Compute probability of real-life events.

Course Outcomes:

After completing this course students will be able to

4. Understand the basic concepts of random experiment, random variable, probability, etc.
5. Use concept of probability in real life situations.
6. Compute probability of real-life events.

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks
4.5	I	665261	Statistics OE1 Elements of Statistics	2	2 Hrs	2 Hrs	30

Serial No.	Contents	Workload Allotted	Weight age of Marks Allotted
Unit I	Introduction to Statistics 1.1 Meaning, origin and development of Statistics 1.2 Various definition of Statistics 1.3 Importance and Scope of Statistics 1.4 Limitations and Distrust of Statistics	7 Hrs	7 Marks
Unit II	Data Structure 2.1 Definition and concept of Data 2.2 Population and Sample with example, sample survey and its need 2.3 Types of data: Quantitative, qualitative, nominal, ordinal	8 Hrs	8 Marks

	2.4 Frequency and Non-Frequency data, Discrete, continuous data, time series data.		
Unit III	Data Collection 3.1 Requisites of reliable data 3.2 Method for collection of primary data (direct personal interview, indirect and interview, information from correspondents, mailed questionnaire method) 3.3 Difference between primary and secondary data. 3.4 Sources of Primary and Secondary data	7Hrs	7 Marks
Unit IV	Introduction to Probability 4.1 Un-probabilistic and Probabilistic Phenomenon 4.2 Basic terminology in probability 4.3 Mathematical and Statistical probability – definition and limitations 4.4 Simple problems on probability	7Hrs	7 Marks

References :

Course Material/Learning Resources

Text books:

- 1) मुलभूत सांख्यिकी : प्रा. राम देशमुख – विद्याप्रकाशन
- 2) संख्यात्मक तंत्रे : प्रा. राम देशमुख – विद्याप्रकाशन
- 3) सांख्यिकी मुलभूत तंत्रे : प्रा. पुरुषोत्तम नवघरे – विद्याप्रकाशन

Reference Books:

- 1) Bhat B.R. Shrivankataraman T and RaoMadhava K.S. (1996) : Statistics: A Beginners's Text Vol.1, New Age International (P) Ltd.
- 2) Goon A.M., Guptam M.K., Dasgupta B: Fundamental of Statistics, Vol 1, 2, World Press Calcutta.
- 3) Croxton F.E. , Cowden D.J.andKelin S: Applied Generatl Statistics, Prentice Hall India
- 4) Gupta S.C. ,Kapoor V.K. : Fundamental of Mathematical Statistics; S. Chand & Company

B.A. First Year – Semester I**Subject / Course Name: Statistics GOEC****Syllabus: Vertical c, Statistics OE2 Introduction of Statistical Methods**

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks
4.5	I	665262	Statistics OE2 Introduction of Statistical Methods	2	30	2 Hrs	30

Course Objectives:

After completing this course students will be able to,

1. Understand the concept of Presentation of data.
2. Learn about Indian Statisticians.
3. Can express the vast and diverse data into compact and more representative manner.
4. Get the knowledge of Vital statistics.

Course Outcomes:

After completing this course students will be able to,

1. Students develop with basic knowledge about Statistics and its scope in various fields.
2. Become familiar with handling of data.
3. Can express the vast and diverse data into compact and more specific manner.
4. Get the knowledge of Vital statistics analysis.

Serial No.	Contents	Workload Allotted	Weight age of Marks Allotted
Unit I	Architects of Modern Statistics in India 1.1 Definition of Statistics and Statistical System in India 1.2 Prof. P. C. Mahalanobis and his work 1.3 Prof. C. R. Rao and his work 1.4 Prof. P.V. Sukhatme and his work	7 Hrs	7 Marks
Unit II	Presentation of data 2.1 Graphical representation: Rules, Types and importance of histogram, frequency polygon,	8 Hrs	8 Marks

	frequency curve. 2.2 Diagrammatic representation: Line diagram, Bar diagram, Pie Diagram. 2.3 Rules, advantages and disadvantages of diagrammatic representation 2.4 Frequency Distribution : Discrete and continuous frequency distribution, class, class limits, class interval, types of classes		
Unit III	Measures of Central tendency 3.1 Central Tendency: Concept, definition and measures 3.2 Characteristics of ideal measure, merit, demerits and uses of arithmetic mean, median and mode 3.3 Relation between mean, median and mode 3.4 Partition values – Quatiles, deciles and percentiles	8 Hrs	8 Marks
Unit IV	Vital Statistics – Fertility 4.1 Vital Statistics and Fertility – Definition 4.2 CBR – Merits and De-merits 4.3 General Fertility Rate, Total Fertility Rate with merit and demerits 4.4 Measurements of Population Growth	7 Hrs	7 Marks

References :

Course Material/Learning Resources

Text books:

- 1) मुलभूत सांख्यिकी : प्रा. राम देशमुख – विद्याप्रकाशन
- 2) संख्यात्मक तंत्रे : प्रा. राम देशमुख – विद्याप्रकाशन
- 3) सांख्यिकी मुलभूत तंत्रे : प्रा. पुरुषोत्तम नवघरे – विद्याप्रकाशन

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B. A. First Year – Semester II

Subject / Course Name: Statistics GOEC

Syllabus: Vertical c, Statistics OE3 Central Tendency Measures

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks
4.5	I	665263	Statistics OE3 Central Tendency Measures	2	30	2 Hrs	30

Course Objectives:

After completing this course students will be able to,

1. Understand the basic concepts of Central Tendency.
2. Learn to apply Central Tendency in real life situations.
3. Learn to compute Central Tendency measures.

Course Outcomes:

After completing this course students will be able to,

1. Become familiar with handling of Central Tendency data.
2. Can express the vast and diverse Central Tendency data into compact and more specific manner.
3. Can measure Central tendency using different measures such as arithmetic mean, median and mode.

Serial No.	Contents	Workload Allotted	Weight age of Marks Allotted
Unit I	1.1 Frequency and Frequency Distribution 1.2 Class, class limits, class interval, types of classes 1.3 Central tendency - concept, definition, importance and need of central tendency 1.4 Measures of central tendency, requisite of ideal measure	8 Hrs	8 Marks

Unit II	2.1 Arithmetic mean for ungrouped data 2.2 Weighted Arithmetic mean and its need 2.3 Properties, merits and de-merits of Arithmetic Mean 2.4 Simple problems on Arithmetic Mean	8 Hrs	8 Marks
Unit III	3.1 Median for ungrouped and grouped data 3.2 Merits and demerits of median 3.3 Partition values – Quartiles, percentiles and deciles 3.4 Simple problems on median	7 Hrs	7 Marks
Unit IV	4.1 Mode for ungrouped and grouped data 4.2 Merits and demerits of mode 4.3 Uses of mode 4.4 Simple problems on mode	7 Hrs	7 Marks

References :

Course Material/Learning Resources

Text books:

- 1) मुलभूत सांख्यिकी : प्रा. राम देशमुख – विद्याप्रकाशन
- 2) संख्यात्मक तंत्रे : प्रा. राम देशमुख – विद्याप्रकाशन
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B. A. First Year – Semester II

Subject / Course Name: Statistics GOEC

Syllabus: Vertical c, Statistics OE4 Indian Official & Vital Statistics

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks
4.5	II	665264	Statistics OE4 Indian Official & Vital Statistics	2	30	2 Hrs	30

Course Objectives:

After completing this course students will be able to

1. Understand the concept of Vital Statistics.
2. Learn to collect the data from Government offices.
3. Get knowledge of various statistical organizations.

Course Outcomes:

After completing this course students will be able to

1. Students develop with basic knowledge about Statistics and its scope in various fields.
2. Students are able to collect the data from Government offices.
3. Become familiar with various statistical organizations.

Serial No.	Contents	Workload Allotted	Weight age of Marks Allotted
Unit I	Vital Statistics 1.1 Definition and use of Vital Statistics 1.2 Sources of Vital Statistics 1.3 Infant Mortality Rate 1.4 Crude Death Rate (CDR) with merits and demerits.	8Hrs	8 Marks
Unit II	2.1 Specific Death Rate (SDR) , Age SDR with merits and Demerits. 2.2 Standardized Death Rate: Direct methods 2.3 Standardized Death Rate: Indirect methods 2.4 Comparison of CDR, SDR.	8Hrs	8 Marks
Unit III	Indian Applied Statistical System 3.1 Official Statistics in India and its sources 3.2 Statistical Organizations and their function in India CSO, NSSO 3.3 Population Statistics and its sources 3.4 Agricultural Statistics and its sources.	7Hrs	7 Marks
Unit IV	4.1 Population census merits and demerits 4.2 De-jure and De-Facto method of census, its merits and demerits 4.3 Principal publication of Transportation and Educational Statistics. 4.4 Principal publication in Trade and Labors statistics.	7Hrs	7 Marks

References:

Course Material/Learning Resources

Text books:

- 1) मुलभूत सांख्यिकी : प्रा. राम देशमुख – विद्याप्रकाशन
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B. A. Second Year – Semester III**Subject / Course Name: Statistics GOEC (Generic / Open Elective)****Syllabus: Vertical-c, Statistics OE5 Dispersion Measures**

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks
5.0	III	665265	Statistics OE5 Dispersion Measures	2	30	2 Hrs	30

Course Outcomes:

After completing this course students will be able to,

1. Understand measures of Dispersion.
2. Learn to compute the variability.

Course Outcomes:

After completing this course students will be able to,

3. Calculate and describe data through measures of Dispersion.
4. Compute the variability between series through these measures.

Serial No.	Contents	Workload Allotted	Weight age of Marks Allotted
Unit I	1.1 Concept, definition and need of dispersion 1.2 Measures of dispersion and ideal measure of dispersion 1.3 Co-efficient of range 1.4 Simple problems on range	7 Hrs	7 Marks
Unit II	2.1 Standard deviation, variance and co-efficient of standard deviation, co-efficient of variation 2.2 Merits and demerits of standard deviation 2.3 Effect of change of origin and scale on standard deviation 2.4 Simple problems on Standard deviation	8 Hrs	8 Marks
Unit III	3.1 Skewness, meaning and types, positive and negative skewness with diagram. 3.2 Measures of skewness, absolute and relative measures 3.3 Coefficient of skewness- Karl Pearson's,	8Hrs	8 Marks

	Bowley's and based on moments. 3.4 Numerical Problem on Skewness		
Unit IV	4.1 Kurtosis: Meaning and types with diagram. 4.2 Measures of Kurtosis 4.3 Relation between skewness and kurtosis 4.4 Numeric problems on Kurtosis	7Hrs	7 Marks

References:

Text books:

- 1) मुलभूत सांख्यिकी : प्रा. राम देशमुख – विद्याप्रकाशन
- 2) संख्यात्मक तंत्रे : प्रा. राम देशमुख – विद्याप्रकाशन
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- 2) Goon A.M., Guptam M.K., Dasgupta B: Fundamental of Statistics, Vol 1, 2, World Press Calcutta.
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B. A. Second Year – Semester IV
Subject / Course Name: Statistics GOEC
Syllabus: Vertical d, Statistics OE6 Estimation and Testing of Hypothesis

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max. Marks
5.0	IV	665266	Statistics OE6 Estimation and Testing of Hypothesis	2	30	2 Hrs	30

Course Outcomes:

After completing this course students will be able to,

1. Understand basic concepts of Estimation and Testing of Hypothesis.
2. Learn to deal with Estimation and Testing of Hypothesis data.
3. Learn to express the Estimation and Testing of Hypothesis data into compact and more representative manner.
4. Get the knowledge of various Large Sample techniques.

Course Outcomes:

After completing this course students will be able to,

1. Students develop with basic knowledge about Estimation and Testing of Hypothesis.
2. Become familiar with handling of Estimation and Testing of Hypothesis data.
3. Can express the vast and diverse Estimation and Testing of Hypothesis data into compact and more specific manner.
4. Get the knowledge of various Large Sample techniques.

Serial No.	Contents	Workload Allotted	Weight age of Marks Allotted
Unit I	1.1 Concept of estimation, Point Estimation and Interval Estimation 1.2 Definitions of Estimator, estimate 1.3 Properties of estimator: Unbiasedness & Consistency	7 Hrs	7 Marks

	1.4 Properties of estimator: Efficiency and Sufficiency		
Unit II	2.1 Introduction, simple and composite hypothesis, test of hypothesis. 2.2 Null hypothesis, alternate hypothesis, critical regions, types of errors. 2.3 Level of significance, power of test. 2.4 Steps in solving testing of hypothesis problems.	8 Hrs	8 Marks
Unit III	3.1 Concept of large sample test 3.2 Single Mean Test: Z-test for testing one sample mean against population mean. 3.3 Two Means Test: Z-test for comparing two independent sample means.	8 Hrs	8 Marks
Unit IV	4.1 Proportion Tests: Z-tests for single proportion 4.2 Proportion Tests: Z-tests for comparing two proportions	7 Hrs	7 Marks

References: Course Material/Learning Resources

Text books:

- 1) मुलभूत सांख्यिकी : प्रा. राम देशमुख – विद्याप्रकाशन
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