



B. Sc. Statistics (Faculty of Science)
Second Year Semester (IV)

Course Code	US04MISTA01	Title of the Course	INDEX NUMBERS AND VITAL STATISTICS
Total Credits of the Course	02	Hours per Week	02

Course Objectives:	<ol style="list-style-type: none">1. To explain the problems arising in the construction of index numbers, importance of an index numbers.2. To perform basic demographic analyses using various techniques.3. To learn the main theories used to understand population studies.
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Course Content		
Unit	Description	Weightage* (%)
I	Index numbers : Introduction, Uses of index number, Steps for construction of index numbers, Problems in the construction of index numbers, Methods of constructing index numbers, Simple (Unweighted) Aggregate method, Weighted Aggregate method, Laspeyre's Price Index, Paasche's Price Index, Fisher's Price Index, Marshall Edgeworth Price Index, Tests of consistency of Index number, Time reversal test, Factor reversal test, Cost of living index numbers	50%
II	Vital Statistics : Uses of Vital statistics and methods of collecting vital statistics, Measurement of Mortality: Crude Death Rate (CDR), Specific Death Rate (SDR), Standardized Death Rate (STDR) Measurement of Fertility: Crude Birth Rate (CBR), General Fertility Rate (GFR), Specific Fertility Rate (SFR), Total Fertility Rate (TFR) Measurement of population growth, Methods of measuring population growth, Crude rate of natural increase, Vital index, Gross Reproduction Rate (GRR)	50%

Teaching-Learning Methodology	Interactive Class Lectures, ICT Tools, hand on experience in problem solving through practical sessions.
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Evaluation Pattern





SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar, Gujarat
(Reaccredited with 'A' Grade by NAAC (CGPA 3.11))
Syllabus with effect from the Academic Year 2024-2025

Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to

1.	Understand the uses of index numbers.
2.	Understand role of vital statistics in study of family and health of Indian population.
3.	Understand the uses GDP, CPI and IIP.

Suggested Text Books/ References:

Sr. No.	Text Books
1.	B. L. Agarwal (2006). Basic Statistics, Revised 4 th Ed., New Age International Publishers. Chap. 18.
2.	Gupta S.C. : Fundamentals of Statistics, Himalaya Publishing House
3.	Gupta S.C. and Kapoor V.K.: Fundamentals of Applied Statistics, Sultan Chand and sons
4.	Ken Black : Business Statistics
	Reference Books
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B. Sc. Statistics (Faculty of Science)
Second year Semester (IV)

Course Code	US04MISTA02	Title of the Course	Statistics Practical - 4
Total Credits of the Course	02	Hours per Week	04

Course Objectives:	<ol style="list-style-type: none">1. Compute the index numbers using various methods2. Calculations of various measures of mortality, fertility and population growth.3. Introduction of the Programming language : Pascal Programming
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List of Practical	
1	Unweighted and Weighted Index numbers
2	Test of consistency of index numbers
3	Cost of index numbers
4	Measurements of mortality : CDR, SDR and Standardized Death Rate (STDR)
5	Measurements of fertility : CBR, GFR, SFR, TFR
6	Measurement of population growth, Methods of measuring population growth, Crude rate of natural increase, Vital index, Gross Reproduction Rate (GRR)
7	Basics of Pascal Programming
8	Algorithm of sum and develop program using Pascal language
9	Pascal programs to calculate various measures of central tendency, dispersion, skewness and kurtosis for ungrouped and grouped data.





(Bachelor of Science in Statistics) (Bachelor of Science)
(B. Sc.) (Statistics) Semester (IV)

Course Code	US04SESTA01	Title of the Course	STATISTICAL INFERENCE IN BIOSTATISTICS
Total Credits of the Course	02	Hours per Week	02

Course Objectives:	1. To learn the basic concepts in testing of hypotheses 2. To learn large and small sample test and its applications in biosciences or medical sciences.
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Course Content		
Unit	Description	Weightage* (%)
1	Test of Significance – I: Test of independence, large sample tests: test for population proportion, test for difference between two population proportions, test for population mean, test for difference between two population means (Formula, Procedure and Examples only)	50
2	Test of Significance – II: Small sample tests: test for population mean, test for difference between two population means (Unpaired t - test), test for difference between two population means (Paired t - test) (Formula, Procedure and Examples only)	50

Teaching-Learning Methodology	
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce,	15%





	Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Use the concepts of testing of hypotheses for large sample tests.
2.	Use the concepts of testing of hypotheses for small sample tests.

Suggested References:	
Sr. No.	References
1.	Mahajan B.K. : Methods in Biostatistics for medical and students and Research workers, seventh edition by Jaypee Brothers medical publishers
2.	Sancheti D.C. and Kapoor V.K. : Statistics
3.	Marcello Pagano: Principles of Biostatistics, Second edition, by Cengage learning, India edition.
4.	Wayne W. Daniel: Biostatistics – A foundation for analysis in the health sciences, seventh edition, Wiley India edition.

On-line resources to be used if available as reference material
On-line Resources





B.Sc.(Any B- Group Subject) (Faculty of Science)
Skill Enhancement Course
Second year Semester (IV)

Course Code	US04SESTA02	Title of the Course	STATISTICS PRACTICAL-IV
Total Credits of the Course	02	Hours per Week	04

Course Objectives:	To study large sample and small sample tests and apply appropriate statistical tests for testing hypotheses.
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List of Practical

Sr.	Manual
1	Problems Based on the Test of Significance for a Single Proportion.
2	Problems Based on the Test of Significance for the Difference Between Two Proportions.
3	Problems Based on the Test of Significance for a Single Mean.
4	Problems Based on the Test of Significance for the Difference Between Two Means.
5	Test of Significance for a Single Mean Using Student's t-Test.
6	Testing the Significance of the Difference Between Two Means Using the Paired t-Test.
7	Testing the Significance of the Difference Between Two Means Using the Un-Paired t-Test.

References

Sr. No.	Text Books
1.	Gupta, S. C., & Kapoor, V. K. (2014). <i>Fundamentals of mathematical statistics</i> . Tata McGraw-Hill Education.
2.	Gupta, S. P. (2018). <i>Statistical methods</i> . Sultan Chand & Sons.
3.	Goon, A. M., Gupta, M. K., & Dasgupta, B. (2016). <i>Fundamentals of statistics (Vol. 1)</i> . The World Press
4.	Triola, M. F. (2018). <i>Elementary statistics</i> . Pearson Education.
5.	Spiegel, M. R. (2017). <i>Schaum's outline of statistics</i> . McGraw-Hill.
6.	Saurabh R. Chaudhari, Dharmesh P. Raykundaliya. (2025). <i>Statistical Analysis Made Simple Using Microsoft Excel</i> . Madhuvan S & G Store.

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25/06/26