

Ahmednagar Jilha Maratha Vidya Prasarak Samaj's

**New Arts, Commerce, and Science College  
Ahmednagar (Autonomous)**

(Affiliated to Savitribai Phule Pune University, Pune)



**National Education Policy (NEP)  
Choice Based Credit System (CBCS)**

**Programme Framework and Syllabus for**

**Open Elective: Statistics**  
**खुला वैकल्पिक विषय: संख्याशास्त्र**

**(For Students of Arts and Science Faculty)**  
**(कला व वाणिज्य शाखेतील विद्यार्थ्यांकरिता)**

**Implemented from**

**Academic Year 2024-25**

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**Introduction of Open Electives (Marathi): For Arts and Commerce Faculty**

It is known that in economic activities are of three types, agriculture, industrial and service. In the same way the subject Statistics is a SERVICE SCIENCE having potential to address the problems in these three fields. In research application of Statistics is mandatory. In the present days, apart from traditional field of career, Data Science, Data Analytics, Data Mining, Data Visualization are the upcoming field of career for Statistics students. In these field student must have mathematical ability, statistical thinking, computer (Software and programming) knowledge and communication (Verbal and written). These points are taken into consideration to design the syllabus and examination pattern of Statistics. In addition to academics, the department takes care to arrange a series of lectures on interview skills, preparation of CV, improve communication skill and overall personality development. The students are given the task of event management so that they can practice the principles of management such as leadership, creativity, communication, time management, group activity, team work, etc. In general, through curricular, co-curricular and extra-curricular activities student in three years is developed as thought provoker, problem solver, technologically sound, with command on communication, strong self-confidence.

B. Sc. in Statistics program is of three years' duration, with semester pattern for all the three years. The important feature of the syllabus is that, all practical's from first year to third year will be conducted on computer using MS-EXCEL/ R Suit, Python programming and Tableau.

The course on Tableau will give an opportunity to learn thousands of various data presentation types and to present the complex data by easy way. The practical examinations of all courses will be on computer. In short, maximum exposure is given to students to work on computer and evaluate them on computer.

The syllabus is framed with appropriate weightage of theory, applied and skill enhancement courses. After receiving B.Sc. degree, student is expected to have minimum knowledge of various courses and student will have ability to analyze the

data with relevant interpretation of results. After completion of B.Sc. honours students get maximum knowledge about statistics, so that student can handle any big data.

## **2. Programme Outcomes (POs)**

Students enrolled in the program complete a curriculum that exposes and trains students in a full range of essential skills and abilities. They will have the opportunity to master the following objectives.

1. Student will achieve the skill of understanding the data.
2. Student will be able to develop the data collection instrument.
3. Student will have skill to write a story using data visualization.
4. Student will understand the interdisciplinary approach to correlate the statistical concepts with concepts in other subjects.
5. Student will be made aware of history of Statistics and hence of its past, present and future role as part of our culture.
6. Students will demonstrate conceptual domain knowledge of the Statistics in an integrated manner.
7. Student will play the key role in management for effective functioning.

**Open Elective/ Generic Elective Framework and Course Distribution:****Subject: (For Arts and Commerce Faculty )**

Sr. No.	Year	Semester	Level	Course Type	Course Code	Title	Credits
1.	I	I	4.5	OE-01	OE-ST 01T/P	Bussiness Statistics I	02
2.	I	II	5.0	OE-01	OE-ST 02T/P	Practical (Bussiness Statistics I )	02
3.	II	III	5.5	OE-03	OE-ST 03T/P	Bussiness Statistics II	02
4.	II	IV	6.0	OE-04	OE-ST 04T/P	Practical (Bussiness Statistics II )	02
<b>Total</b>							<b>08</b>

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**Syllabus of Open Elective:**

<b>Title of the Course: Bussiness Statistics I</b>								
<b>Year: I</b>				<b>Semester: I</b>				
Course Type	Course Code	Credit Distribution		Credits	Allotted Hours	Allotted Marks		
		Theory	Practical			CIE	ESE	Total
<b>OE-01</b>	OE-ST 01	02	00	02	30	15	35	50

**Learning Objectives:**

- 1) To study different scaling methods for variable and attribute.
- 2) To learn different tools to visualize data.
- 3) To study the different techniques of descriptive Statistics.
- 4) To study the concepts of cherterstic properties bivariate relation. \
- 5) To study appropriate index number for various commodities.

**Course Outcomes (COs):**

- 1) Understand role and importance of statistics in various business situations .
- 2) To develop skills related with basic statistical techniques.
- 3) Develop right understanding regarding regression, correlation and data interpretation.

**Detailed Syllabus:**

Unit - I		<b>Exploratory Data Analysis Methods</b>	<b>7L</b>
	1.1	<b>Types of data:</b> Scaling methods: i)Attributes: Nominal scale, ordinal scale, Likert's scale ii)Variables: Interval scale, ratio scale, Discrete and continuous variables, difference between linear scale and circular scale, Review of Types of data such as Primary data, Secondary data, Cross-sectional data, time series data, directional data, panel data.	
	1.2	Review of graphical and diagrammatic techniques such as Graphs & Diagram- Histogram, frequency polygon and frequency curve, Ogive curve, Pie chart , Bar Diagram, Multiple bar Diagram, Sub-divided bar diagram	
Unit – II		<b>Measures of Central Tendency and Dispersion</b>	<b>8L</b>

		Review of Types of Measure of Central Tendency: Arithmetic Mean, Median, Mode for discrete and Continuous frequency distribution, Combined Mean, trimmed arithmetic mean, partition values.	
Unit – III		<b>Measures of Dispersion</b>	<b>7L</b>
		Review of Types of Measure of Dispersion- Absolute & Relative Measure dispersion Range, Semi-interquartile range (Quartile deviation), Mean deviation( about mean, mode and median), Variance and standard deviation, coefficient of range, coefficient of quartile deviation and coefficient of mean deviation, coefficient of variation(C.V.)	
Unit - IV		<b>Correlation</b>	<b>8L</b>
	3.1	Correlation: Bivariate data, Scatter diagram and interpretation. Concept of correlation between two variables, positive correlation, negative correlation, no correlation. Covariance between two variables, Karl Pearson’s coefficient of correlation (r): Definition, computation for ungrouped data and interpretation, Properties. Spearman’s rank correlation coefficient (with and without ties)	

**Suggested Readings/Material:**

- 1) Strategic Management: The Indian Context, R. Srivivasan
- 2) Concepts in Strategic Management and Business Policy, By Thomas L. Wheelen, J. David Hunger, Alan Hoffman, Charles E. Bamford
- 3) Strategic Management, Fred R. David, Forest R. David
- 4) Probability and Statistics, R Walpole, S Myers and K Ye Pearson Education International London.
- 5) Fundamentals of Mathematical Statistics, S.C. Gupta and V.K. Kapoor, Sultan Chand & Sons New Delhi.
- 6) Fundamentals of Applied Statistics, S.C. Gupta, Sultan Chand & Sons New Delhi.
- 7) Quantitative Techniques for Business, Dr. A.B. Rao, Jaico Publishing House Mumbai.
- 8) Fundamentals of Statistics, D.N. Elhance, Kitab Mahal Kanpur.

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**Syllabus of Open Elective:**

<b>Title of the Course: Practical (Business Statistics I)</b>								
<b>Year: I</b>				<b>Semester: II</b>				
Course Type	Course Code	Credit Distribution		Credits	Allotted Hours	Allotted Marks		
		Theory	Practical			CIE	ESE	Total
<b>OE-02</b>	OE-ST 02	02	00	02	30	15	35	50

Sr. No.	Title of the Practical	No. of Practical's
1	Diagrammatic Representation of Data	1
2	Graphical Representation of Data	1
3	Sampling Methods	1
4	Classification and Tabulation	1
5	Measures of Central Tendency for ungrouped data	1
6	Measures of Central Tendency for grouped data	1
7	Measures of Dispersion for ungrouped data	1
8	Measures of Dispersion for grouped data	1
9	Correlation-I	1
10	Corelation –II	1
	<b>Total</b>	<b>10</b>