



SRI VENKATESWARA UNIVERSITY

Accredited By 'NAAC' With 'A+' Grade

Syllabus for B.Sc. (Statistics) as Major in consonance with Curriculum framework w.e.f.

AY 2025-26

COURSE STRUCTURE (for Semester I to VI)

Year	Semester	Course	Title of the Course	No.of Hrs /Week	No. of Credits
I	I	1	Descriptive Statistics	3	3
			Descriptive Statistics Practical Course	2	1
		2	Theory of Probability and Mathematical Expectations	3	3
			Theory of Probability and Mathematical Expectations Practical Course	2	1
	II	3	Theoretical Discrete Distributions	3	3
			Theoretical Discrete Distributions Practical Course	2	1
		4	Theoretical Continuous Distributions	3	3
			Theoretical Continuous Distributions Practical Course	2	1
II	III	5	Statistical Methods	3	3
			Statistical Methods Practical Course	2	1
		6	Inferential Statistics	3	3
			Inferential Statistics Practical Course	2	1
		7	Sampling Techniques	3	3
			Sampling Techniques Practical Course	2	1
	IV	8	Design and Analysis of Experiments	3	3
			Design and Analysis of Experiments Practical Course	2	1
		9	Applied Statistics	3	3
			Applied Statistics Practical Course	2	1
		10	Statistical data analysis using MS - excel	3	3
			Statistical data analysis using MS – excel practical course	2	1

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Year	Semester	Course	Title of the Course	No. of Hrs /Week	No. of Credits
III	V	11	Computational Statistics and R Programming	3	3
			Computational Statistics and R Programming practical Course	2	1
		12 A	Operations Research	3	3
			Operations Research Practical Course	2	1
		OR			
		12 B	Actuarial Statistics	3	3
			Actuarial Statistics Practical Course	2	1
		13 A	Optimization Techniques	3	3
			Optimization Techniques Practical Course	2	1
		OR			
		13 B	Applied Statistics – II	3	3
			Applied Statistics – II Practical Course	2	1
	VI	14 A	Statistical Quality Control	3	3
			Statistical Quality Control Practical Course	2	1
		OR			
		14 B	Advanced Actuarial Statistics	3	3
			Advanced Actuarial Statistics Practical Course	2	1
		15 A	Statistical Techniques for Research Methodology	3	3
			Project work	2	1
		OR			
		15 B	Statistical Analysis for Clinical Trials	3	3
			Statistical Analysis for Clinical Trials Practical Course	2	1

Note: In the III Year (during the V and VI Semesters), students are required to select a pair of electives from one of the Two specified domains. For example: if set ‘A’ is chosen, courses 12 to 15 to be chosen as 12 A, 13 A, 14 A and 15 A or if set ‘B’ is chosen, It is to be chosen as 12 B, 13 B, 14 B and 15 B to ensure in-depth understanding and skill development in the chosen domain, students must continue with the same domain electives in both the V and VI Semesters.


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SEMESTER - II
COURSE 4: THEORETICAL CONTINUOUS DISTRIBUTIONS

Theory

Credits: 3

3hrs/week

Course Outcomes

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

1. To deal with the data by the basic continuous distribution such as Uniform Binomial distribution.
2. To acquaint the Exponential distribution applications.
3. To learn about the Gamma and Beta distributions and their applications towards the real life problems.
4. To get familiarity of the most important distributions such as Normal and Standard Normal distribution and their applications in research and various fields.
5. To acquire the knowledge of exact sampling distributions.

Unit – 1: Continuous Uniform distribution

Uniform distribution – Definition, moments, M.G.F, C.F, C.G.F, skewness, kurtosis and Distribution function. Mean Deviation about mean.

Unit – 2: Exponential Distribution

Exponential distribution – Definition, moments, M.G.F, C.F, C.G.F, skewness, kurtosis and Distribution function. Memory less property.

Unit – 3: Gamma and Beta Distributions

Gamma Distribution - Definition, moments, M.G.F, C.F, C.G.F, skewness, kurtosis and additive property. Limiting form of gamma distribution.

Beta Distribution of first and second kind – Definition, mean, variance and harmonic mean.

Unit – 4: Normal Distribution

Normal Distribution – Definition, properties, importance, M.G.F, C.F, C.G.F, additive property, skewness, kurtosis and problems. Obtain mean, median and mode, Even and Odd order moments about mean, linear combination of normal variates, points of inflexion of normal probability curve.

Unit – 5: Standard Normal and Sampling Distributions

Standard Normal Distribution – Definition, mgf, mean and variance, Area property, problems. Concept of Population, Sample, Parameter, Statistic, Sampling Distribution. Student's t – distribution, F – Distribution, χ^2 – Distribution: Definitions, properties and their applications.

Text Books

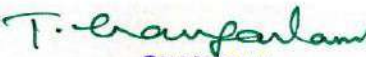
1. S. C. Gupta & V. K. Kapoor: Fundamentals of Mathematical Statistics, Sultan Chand & Sons, New Delhi.
2. K. Rohatgi & Ehsanes Saleh: An Introduction to Probability and Statistics, John Wiley & Sons.

References

1. O. P. Gupta: Mathematical Statistics, Kedar nath Ram nath & Co.
2. P. N. Arora & S. Arora: Quantitative Aptitude Statistics – Vol II, S. Chand & Company Ltd.

Suggested Co-curricular Activities:

1. Training of students by related industrial experts.
2. Assignments including technical assignments if any.
3. Seminars, Group Discussions, Quiz, Debates etc. on related topics.
4. Preparation of audio and videos on tools of diagrammatic and graphical representations.
5. Collection of material/figures/photos/author photos of related topics.
6. Invited lectures and presentations of stalwarts to those topics.
7. Visits/field trips of firms, research organizations etc.


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SEMESTER-II
COURSE 4: THEORETICAL CONTINUOUS DISTRIBUTIONS

Practical

Credits: 1

2hrs/week

List of Experiments:

1. Calculation of moments of Uniform distribution.
2. Calculation of skewness and kurtosis of Uniform distribution.
3. Fitting of Exponential distribution.
4. Gamma distribution application-oriented problems.
5. Fitting of Normal distribution – Areas method.
6. Fitting of Normal distribution – Ordinates method.
7. Problems related to Standard Normal distribution.


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SRI VENKATESWARA UNIVERSITY : TIRUPATI
THREE YEAR (CBCS) DEGREE EXAMINATIONS
UG COMMON MODEL QUESTION PAPER
w.e.f. Academic Year 2025 – 26

Time : 3 Hours

Max. Marks:75

SECTION – A

Answer any FIVE of the following
(Marks: 5 x 3 marks = 15 marks)

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

SECTION – B

Answer the following questions. Each question carries 12 Marks

5x12=60

UNIT- I

- 11.
- OR
- 12

UNIT - II

- 13.
- OR
- 14.

UNIT - III

- 15.
- OR
- 16.

UNIT - IV

- 17.
- OR
- 18.

UNIT - V

- 19.
- OR
- 20.

T. Gangaram
Dr. T. GANGARAM
LECTURER IN STATISTICS
SVA GOVT. COLLEGE (M)
SRIKALAHASTI-517 644.
Chairman BOS
Statistics

