



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 3: THEORETICAL DISCRETE 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 discrete distributions such as Uniform and Binomial distributions.
2. To acquaint the Poisson distribution applications.
3. To learn about the Negative Binomial distribution and its applications towards the real life problems.
4. To familiar with dealing the data by Geometric and Hyper Geometric distributions.

Unit – 1: Uniform, Bernoulli and Binomial distributions

Discrete Uniform distribution – definitions, mean, variance. Bernoulli distribution – definitions, mean, variance and its mgf. Binomial distribution – Definition, moments, M.G.F, C.F, C.G.F, P.G.F, additive property if exists, skewness, kurtosis and problems. First two moments obtained through mgf, recurrence relation for probabilities, limiting case of Binomial Distribution to Normal distribution.

Unit – 2: Poisson Distribution

Poisson distribution - Definition, moments, M.G.F, C.F, C.G.F, P.G.F, additive property if exists, skewness, kurtosis and problems. First two moments obtained through mgf, recurrence relation for probabilities. Poisson distribution as a limiting case of Binomial distribution, limiting case of Poisson Distribution to Normal distribution.

Unit – 3: Negative Binomial Distribution

Negative Binomial Distribution - Definition, moments, M.G.F, C.F, C.G.F, P.G.F, additive property if exists, skewness, kurtosis and problems. First two moments obtained through mgf, recurrence relation for probabilities. Limiting case of Negative Binomial Distribution to Normal distribution.

Unit – 4: Geometric Distribution

Geometric Distribution – Definition, moments, M.G.F, C.F, C.G.F, P.G.F, additive property if exists, skewness, kurtosis and problems. First two moments obtained through mgf, Lack of memory property. Recurrence relation for probabilities.

Unit – 5: Hyper Geometric Distribution

Hyper Geometric Distribution – Definition, mean and variance, problems. Recurrence relation for probabilities. Limiting case of Hyper Geometric distribution to Binomial distribution.


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Text Books

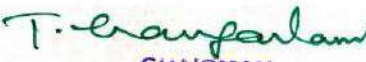
1. S. C. Gupta & V. K. Kapoor: Fundamentals of Mathematical Statistics, Sultan Chand & Sons, New Delhi.
2. K. Rohatgi & Ehsanes Saleh: An Introduction to Probability and Statistics, John Wiley & Sons.

References

1. O. P. Gupta: Mathematical Statistics, Kedarnath Ramnath & 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 3: THEORETICAL DISCRETE DISTRIBUTIONS

Practical

Credits: 1

2hrs/week

List of Experiments:

1. Fitting of Binomial distribution – Direct method.
2. Fitting of Binomial distribution – Recurrence relation Method.
3. Fitting of Poisson distribution – Direct method.
4. Fitting of Poisson distribution – Recurrence relation Method.
5. Fitting of Negative Binomial distribution – Direct method.
6. Fitting of Negative Binomial distribution – Recurrence relation Method.
7. Fitting of Geometric distribution – Direct method.
8. Fitting of Geometric distribution – Recurrence relation Method.
9. Fitting of Hyper Geometric 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

