



SRI VENKATESWARA UNIVERSITY
II Year Syllabus for 4-Year UG Honours in BCA Data Science Honours
in consonance with the Curriculum framework w.e.f. AY 2026-27
II Year III Semester

Sl. No.	Category	Course No.	Course Name	No. of Hours		Total No. of Hours	No. of Credits		Total No. of Credits
				Theory	Practical		Theory	Practical	
1	Major-Core	5	Mathematical and Statistical Foundation	5	0	5	4	0	4
2	Major-Core	6	OOPS Through JAVA	3	2	5	3	1	4
3	Major-Core	7	Data Science With R	3	2	5	3	1	4
4	Minor	1		4	0	4	4	0	4
5	AECC	1	English	4	0	4	3	0	3
6	AECC	1	MIL (Telugu/Hindi/Sanskrit)	4	0	4	3	0	3
7	MDC	2	-	2	0	2	2	0	2
8	SEC	3	SEC: Design Thinking/Problem solving/ others	2	0	2	2	0	2
				27	4	31	24	2	26

Note:

The number of instructional hours shall be five (5) for courses involving problem-solving, and four (4) for courses comprising only theory.


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 CHAIRPERSON
 BOS (PASS) IN COMPUTER SCIENCE
 S.V. UNIVERSITY
 TIRUPATI



SRI VENKATESWARA UNIVERSITY

II Year Syllabus for 4-Year UG Honours in BCA Data Science as Major in consonance with Curriculum framework w.e.f. AY 2026-27

Year	Semester	Course	Title of the Course	No. of Hrs /Week	No. of Credits
II	III	5	Mathematical and Statistical Foundation	5	4
		6	OOPS Through JAVA	3	3
			OOPS Through JAVA – Practical	2	1
		7	Data Science With R	3	3
			Data Science – Practical	2	1

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BCA Data Science Honours

II Year III Semester

COURSE 5 : Mathematical and Statistical Foundation

Theory

Credits: 3

3 hrs/week

Learning Outcomes: After successful completion of this course, the student will be able to;

1. Have an idea about basic mathematical techniques which are necessary to analyze the statically technique.
2. Able to know the concept of matrices and its operations.
3. Able to complete the adjoint and determinate of a square matrix, hence it's inverse.
4. Capable of solving the simultaneous equations using matrix method.
5. Understands the technique differentiation, integration and its applications.

UNIT-I

Matrix Algebra-I: Introduction-Definition of Matrix-Variety types of Matrices- Addition of Matrices-Subtraction of Matrices-Multiplication of Matrices and their applications. Transpose of a Matrix-Symmetric Matrix-Skew Symmetric Matrix Orthogonal Matrix-Singular Matrix-NonSingularMatrix.

UNIT-II

Matrix Algebra- II: Determinant of a Matrix- Adjoint of a Square Matrix - Inverse of a Matrix up to 3 order only, Rank of a Matrix.

Solutions of Linear equations: 1. Matrix inversion method 2. Cramer's Rule up to 3 order only

UNIT-III

Set Theory: Definition of Set-Types of Sets-Union of Sets-Intersection of Sets-Venn diagrams-Operations on Sets-Complement of Set-Distributive Laws-De'Morgan's Laws.

Note:

1. Concentration on numerical problems only.
2. Proofs of theorems and Derivations of are omitted.

UNIT-IV

Basics of Statistics: Classification – Tabulation - Frequency distribution table – Oneway Frequency distribution table – Two-way Frequency distribution table

UNIT-V: Statistical Measures: Measure of averages – Mean – combined mean – Median – Quartiles- Deciles – Percentiles - Mode – Empirical relationship between mean, median and mode.

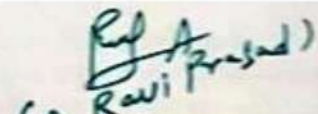
TextBooks:

1. Mathematical Methods by Dr. T.K.V. Ivengar, Dr. B. Krishna Gandhi, Dr. S. Ranganatham, and Dr. M.V.S.S.N.

Prasad by S. Chand publications 6th revised edition 2011.

2. Quantitative Techniques by C. Satyadevi by Chand Company

3. Statistical Methods by S.P. Gupta


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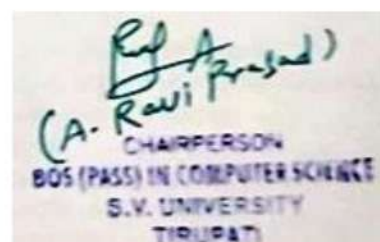
Practicals

Credits: 1

2 hrs/week

List of Lab Experiments & simple implementation using any programming language

1. Addition, Subtraction of Matrices.
2. Multiplication of Matrices.
3. Determinant of a Matrix and Inverse of a Matrix.
4. Singular and Non-Singular Matrices.
5. Cramer's Rule and Matrix Inversion Method.
6. Rank of a Matrix.
7. Preparation of two – way frequency table
8. Problem on Histogram
9. Problem on Mean and Median.
10. Empirical relationship between mean, median and mode



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BCA Data Science Honours
II Year III Semester
COURSE 5 : Mathematical and Statistical Foundation

Time : 3 Hrs

Max Marks : 75

SECTION - A

Answer any FIVE of the following

5 X 3= 15 Marks

1. Short answer question from unit-I
2. Short answer question from unit-I
3. Short answer question from unit-II
4. Short answer question from unit-II
5. Short answer question from unit-III
6. Short answer question from unit-III
7. Short answer question from unit-IV
8. Short answer question from unit-IV
9. Short answer question from unit-V
10. Short answer question from unit-V

SECTION-B

Answer FIVE of the following.

5 X 12=60 Marks

11. a) Essay question from Unit-I
OR
b) Essay question from Unit-I
12. a) Essay question from Unit-II
OR
b) Essay question from Unit-II
13. a) Essay question from Unit-III
OR
b) Essay question from Unit-III
14. a) Essay question from Unit-IV
OR
b) Essay question from Unit-IV
15. a) Essay question from Unit-V
OR
b) Essay question from Unit-V