

Shiv Chhatrapati Shikshan Sanstha's

Rajarshi Shahu Mahavidyalaya, Latur

Empowered Autonomous Institution



**Structure and Curriculum of Four Year Multidisciplinary
Degree (Honors/Research) Programme with Multiple
Entry and Exit option**

Undergraduate Programme of Science and Technology

B.Sc. AI & ML

Board of Studies

in

B. Sc. AI & ML

Rajarshi Shahu Mahavidyalaya, Latur

Empowered Autonomous Institution

[UG I Year]

**Rajarshi Shahu Mahavidyalaya,
Latur (Autonomous)**

w.e.f. June, 2026

(In Accordance with NEP-2020)

Review Statement

The NEP Cell reviewed the Curriculum of **B.Sc. AI & ML** to be effective from the **Academic Year 2026-27**. It was found that, the structure is as per the NEP-2020 guidelines of Govt. of Maharashtra.

Date: 11/04/2026

Place: Latur

NEP CELL

Rajarshi Shahu Mahavidyalaya, Latur
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CERTIFICATE

I hereby certify that the documents attached are the Bonafide copies of the Curriculum of **B.Sc. AI & ML** to be effective from the **Academic Year 2026-27**.

Date: 06/04/2026

Place: Latur



(Ms. Jyoti Mashalkar)

Chairperson

Board of Studies in Computer Science
Rajarshi Shahu Mahavidyalaya, Latur
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Latur (Autonomous)**



Shiv Chhatrapati Shikshan Sanstha's

Rajarshi Shahu Mahavidyalaya, Latur

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Members of Board of Studies in Computer Science

Under the Faculty of Science and Technology

Sr. No.	Name	Designation	In position
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3	Dr. Ranjit Patil Principal, Dr. D. Y. Patil, A.C.S. College, Pimpri, Pune	Member	Academic Council Nominee
4	Dr. Smita R. Bhanap Assistant Professor, Department of Computer Science, Fergusson College (Autonomous), Pune	Member	Academic Council Nominee
5	Mr. Jayu Katti Partner Director of Engineering at Microsoft	Member	Expert from outside for Special Course
6	Mr. Sudhakar Gavhane Senior Consultant Specialist with HSBC India Pvt. Ltd., Pune	Member	Expert from Industry
7	Mr. Vivekanand Naragude Technical Lead, Fareportal India, Gurugram, Haryana	Member	Alumni
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9	Ms. Chandraprabha Kulkarni Assistant Professor, Rajarshi Shahu Mahavidyalaya, Latur (Empowered Autonomous Institution)	Member	Faculty Member
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15	Ms. Supriya Birajdar (Ghugare) Assistant Professor, Rajarshi Shahu Mahavidyalaya, Latur (Empowered Autonomous Institution)	Member	Faculty Member

From the Desk of the Chairperson...

It is a great pleasure and honor to present the revised syllabi for the First Year of B.Sc. in Computer Science under the NEP-2020 framework, to be implemented from the academic year 2026-27.

Keeping in mind the mission of the institution, “Pursuit for Excellence,” and adhering to its core values: Academic Excellence, Expanding Horizons of Knowledge, Learning for Life, and Service to the Nation, the revision of the syllabus reflects our continuous commitment to academic quality and excellence in higher education.

NEP-2020 emphasizes key reforms in higher education by promoting a multidisciplinary approach for the holistic development of students. It aims to nurture learners as carriers of knowledge, wisdom, and values, equipping them with the ability to adapt to dynamic changes in the global environment.

The courses designed for the First Year of the B.Sc. Computer Science programme focus on building a strong foundation in core computing concepts, problem-solving skills, and analytical thinking. They offer a balanced combination of theoretical knowledge and practical exposure in areas such as programming, data handling, mathematical foundations, and emerging technologies. Skill-based and value-added components also incorporated to enhance critical thinking, creativity, and interdisciplinary learning.

While revising the syllabi, valuable feedback from stakeholders, recent technological advancements, and the evolving requirements of the global IT industry has considered. This revision aims to further strengthen the curriculum, foster holistic student development, and enhance employability.

I express my sincere gratitude to our Principal, Dr. Mahadev Gavhane; Vice Principal, Prof. Sadashiv Shinde; and Nodal Officer of the NEP Cell, Dr. Anuja Jadhav, along with the entire team, for their continuous guidance and support throughout the process of revising the syllabi for the First Year of B.Sc. Computer Science in alignment with NEP-2020.

I also extend my heartfelt thanks to all the members of the Board of Studies for their valuable suggestions and contributions in shaping the courses for this programme.

Finally, I would like to thank everyone who has been directly or indirectly involved in the syllabus revision process.

Thank you.

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Rajarshi Shahu Mahavidyalaya,
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Ms. Jyoti Mashalkar

Chairperson

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Faculty of Science and Technology

Structure for Four Year Multidisciplinary Undergraduate Degree Programme in Computer Science Multiple Entry and Exit (In accordance with NEP-2020)

Year & Level	Sem	Major		Minor	OE	VSC/ SEC (VSEC)	AEC/ VEC	OJT,FP,CE P, RP	Credit per Sem.	Cum./Cr. per exit
		DSC	DSE							
1	2	3		4	5	6	7	8	9	10
I 4.5	I	DSC I: 04 Cr. DSC II: 04 Cr.	NA	NA	OE-I: 04 Cr.	VSC-I: 02 Cr. SEC-I: 02 Cr.	AEC-I MIL: 02 Cr. VEC-I: 02 Cr.	CC-I: 02 Cr. (NSS, NCC, Sports, Cultural)/ CEP-I: 02 Cr. (SES-I)/ OJT: 02 Cr. / Mini Project: 02 Cr.	22	44 Cr. UG Certificate
	II	DSCIII: 04 Cr. DSC IV: 04 Cr.	NA	NA	OE-II: 04 Cr.	VSC-II: 02 Cr. SEC-II: 02 Cr.	AEC-II MIL: 02 Cr. VEC-II: 02 Cr.	Generic IKS: 02 Cr.	22	
	Cum. Cr.	16	-	-	08	04+04= 08	04+02 +02=0 8	04	44	
Exit Option: Award of UG Certificate in Major with 44 Credits and Additional 04 Credits Core NSQF Course/Internship or continue with Major and Minor										

Abbreviations:

1. DSC : Discipline Specific Core (Major)
2. DSE : Discipline Specific Elective (Major)
3. DSM : Discipline Specific Minor
4. OE : Open Elective
5. VSEC : Vocational Skill and Skill Enhancement Course
6. VSC : Vocational Skill Course
7. SEC : Skill Enhancement Course
8. AEC : Ability Enhancement Course
9. MIL : Modern Indian Languages
10. IKS : Indian Knowledge System
11. FSRCE : Fostering Social Responsibility & Community Engagement
12. VEC : Value Education Course
13. OJT : On Job Training
14. FP : Field Project
15. CEP : Community Engagement Programme
16. CC : Co-Curricular Course
17. RP : Research Project/Dissertation
18. SES : Shahu Extension Services

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Faculty of Science and Technology

B.Sc. Computer Science

Year & Level	Semester	Course Code	Course Title	Credits	No. of Hrs.
I 4.5	I	(DSC-I)	Programming using Python	03	45
			Lab Course-I	01	30
		(DSC-II)	Probability & Statistics	03	45
			Lab Course-II	01	30
		OE-I	From Basket	04	60
		(VSC-I)	Digital Electronics Basics	02	45
		(SEC-I)	From Basket	02	45
		(AEC-I)	English for Professionals-I	02	30
		(VEC-I)	Constitution of India	02	30
		AIPC/OJT-I	Mini Project – I	02	60
	Total Credits			22	
	II	(DSC-III)	Object-Oriented Programming using Python	03	45
			Lab Course-III	01	30
		(DSC-IV)	Discrete Mathematics	03	45
			Lab Course-IV	01	30
		OE-II	From Basket	04	60
		(VSC-II)	Data Handling with Excel	02	45
		(SEC-II)	From Basket	02	45
		(AEC-II)	English for Professionals-II	02	30
		CC	CC – I	02	30
		Generic IKS	Introduction to Indian Knowledge System	02	30
	Total Credits			22	
Total Credits (Semester I & II)				44	



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Name of the Programme: B.Sc. (Computer Science)

Programme Outcomes (POs) for B.Sc. (Computer Science)	
PO 1	Core Knowledge and Problem Solving: Apply fundamental knowledge of computing and use logical and computational thinking.
PO 2	Design and Development: Design, develop, test, and implement software solutions using appropriate tools and techniques.
PO 3	Modern Tools and Technologies: Utilize contemporary technologies, platforms, and tools for real-world applications.
PO 4	Data and Software Practices: Apply data handling techniques, software engineering practices for reliable systems.
PO 5	Ethics, Society and Environment: Evaluate ethical, legal, environmental, and societal impacts of computing solutions.
PO 6	Communication and Teamwork: Communicate effectively and collaborate in multidisciplinary teams.
PO 7	Lifelong Learning and Employability: Engage in continuous learning, innovation, entrepreneurship and career development.
PO 8	Research and Innovation: Apply research-based approaches, critical thinking, and analytical skills to investigate complex computing problems, explore innovative solutions, and contribute to technological advancement.



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Programme Specific Outcomes (PSOs) for B.Sc. (Computer Science)	
PSO No.	After completion of this programme, the students will be able to :
PSO 1	Algorithmic Thinking and Programming: Design and implement efficient algorithms and programs using appropriate data structures to solve computational problems.
PSO 2	Computational Problem Solving: Apply computational techniques and analytical skills to develop effective solutions for complex problems.
PSO 3	System-Level Concepts: Understand and apply operating system concepts and system-level programming principles in computing applications.
PSO 4	Software and Database Development: Design, develop, test, and manage software systems and database applications using appropriate tools and technologies.
PSO 5	Networking and Cybersecurity: Apply principles of computer networks and cybersecurity to ensure secure and reliable communication systems.
PSO 6	Emerging Technologies, Innovation and Research: Explore and apply emerging technologies such as Artificial Intelligence, Machine Learning, and Data Science to develop innovative and research-oriented solutions.

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Semester - I

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Faculty of Science and Technology

Department of Information Technology

UG I Sem-I

Course Type: DSC-I

Course Title: Programming using Python

Course Code:

Credits: 03

Max. Marks: 75

Lectures: 45 Hrs.

Learning Objectives:

- LO.1 Explain the fundamental concepts, syntax, and applications of Python programming in AI and Machine Learning.
- LO.2 Apply Python data types, variables, operators, and input/output functions to develop basic programs.
- LO.3 Develop Python programs using decision-making and looping constructs to solve computational problems.
- LO.4 Develop simple Python-based solutions for real-world problems using fundamental programming concepts.

Course Outcomes:

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

- CO 1. Apply Python data types, variables, operators, and input/output functions to develop basic Python programs.
- CO 2. Develop Python programs using conditional statements and looping constructs to solve computational problems.
- CO 3. Implement modular programs using functions and Python data structures such as strings, lists, tuples, and dictionaries.
- CO 4. Develop simple Python-based solutions by integrating fundamental programming concepts to solve real-world problems.

Unit No.	Title of Unit & Contents	Hrs.
I	Introduction to Python and Basic Programming Concepts	11
	1. Introduction, Installation of Python IDLE 2. Features and Applications of Python 3. Why Python is Preferred for AI and ML 4. Code block and Indentation 5. Data Types, Keywords, Identifiers and variables 6. Input and Output Functions 7. Type Conversion 8. Operators	

Unit No.	Title of Unit & Contents	Hrs.
	Unit Outcomes: UO 1. Explain the fundamentals of Python programming and its role in AI & ML. UO 2. Apply Python basics to develop simple programs using variables, data types, operators, and input/output functions.	
II	Decision Making and Looping	13
	1. Conditional Statements(If, if-else, if-elif-else, Nested if) 2. Looping Statements(while loop, for loop, for each) 3. Loop Control Statements(Break, continue, pass) Unit Outcomes: UO 1. Apply conditional statements to solve decision-making problems. UO 2. Develop Python programs using looping and loop control statements.	
III	Working with Array	13
	1. Introduction to Arrays • Concept and characteristics of arrays • Difference between Python Lists and Arrays • Applications of arrays in scientific computing, data analysis, Artificial Intelligence, and Machine Learning 2. Array Operations • Insertion and deletion of elements • Searching (Linear Search), Sorting and reversing arrays • Finding maximum, minimum, and length of an array 3. NumPy Arrays • Introduction to NumPy • Creating NumPy arrays using: array(), zeros(), ones(), arange(), linspace() • Array attributes: shape, size, dimensions, and data type 4. Two-Dimensional Arrays • Creating two-dimensional arrays • Matrix representation • Accessing rows and columns • Matrix addition, Matrix multiplication Unit Outcome: UO 1. Understand the concept of Array. UO 2. Apply Arrays to organize and manipulate data.	
IV	Functions and Python Data Structures	8
	1. Introduction to Functions 2. Defining and Calling Functions 3. Built in Functions, User Defined Functions 4. Function Arguments Data Structure : Strings, Lists, Tuples, Dictionaries Unit Outcomes: UO 1. Develop modular programs using Python functions. UO 2. Apply Python data structures to organize and manipulate data.	

Learning Resources:

1. Core Python Programming, Second Edition, Wesley J. Chun., Prentice Hall, 2001
2. Learning Python, 5th edition, Mark Lutz, O'Reilly
3. Programming Python, 4th Edition, O'Reilly
4. <https://www.python.org/>
5. <https://www.w3schools.com/python/>
6. <https://www.tutorialspoint.com/python/index.html>

Internal Examination Pattern:

CAT – I: Programming Assignment / Surprise Test

CAT – II: Google Form Online Test / Seminar

Mapping of POs, PSOs and COs:

COs	POs								PSOs					
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	3	2	0	0	0	0	1	2	3	3	0	0	0	1
CO2	3	2	1	2	0	0	1	1	3	2	0	1	0	0
CO3	3	3	2	2	0	0	1	2	3	3	1	2	0	0
CO4	3	3	2	3	1	1	2	2	3	3	1	3	0	1

Scale: 3 = High, 2 = Moderate, 1 = Low, 0 = No correlation.

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Faculty of Science and Technology

Department of Information Technology

UG I Sem-I

Course Type: Lab Course

Course Title: Lab Course –I (Based on DSC-I)

Course Code:

Credits: 01

Max. Marks: 50

Lectures: 30 Hrs.

Learning Objectives:

- LO 1. Explain the Python programming environment and fundamental programming concepts.
- LO 2. Apply Python programming constructs, including input/output, operators, conditional statements, and loops, to solve basic problems.
- LO 3. Implement Python programs using functions, strings, lists, tuples, and file handling techniques.
- LO 4. Develop reliable Python programs by applying exception handling for problem solving.

Course Outcomes:

After completion of the course, students will be able to-

- CO 1. Explain the Python programming environment and fundamental programming concepts.
- CO 2. Apply Python programming constructs, including input/output, operators, conditional statements, and loops, to solve basic problems.
- CO 3. Implement Python programs using functions, strings, lists, tuples, and file handling techniques.
- CO 4. Develop reliable Python programs by applying exception handling for problem solving.

Practical No.	Unit
1	Write a Python Program to Install Python IDLE and Execute a Simple Program.
2	Write a Python Program to Demonstrate Input and Output Statements.
3	Write a Python Program to Perform Operations Using Relational Operators.
4	Write a Python Program to Implement Conditional Statements.
5	Write a Python Program to Demonstrate while Loop.
6	Write a Python Program to Demonstrate for Loop.
7	Write a Python Program to Demonstrate Built-in exception.
8	Write a Python Program to Demonstrate Function Arguments by Adding Two Numbers.
9	Write a Python Program to Perform String Operations.
10	Write a Python Program to Perform Operations on Lists.

11	Write a Python Program to Perform Operations on Tuples.
12	Write a Python Program to Create, Read, Write Text File.
13	Write a Python Program to Demonstrate Exception Handling Using try, except, else, and finally.

N.B.: Any ten practicals from above.



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Faculty of Science and Technology

Department of Information Technology

UG I Sem-I

Course Type: DSC-II

Course Title: Probability & Statistics

Course Code:

Credits: 03

Max. Marks: 75

Lectures: 45 Hrs.

Learning Objectives:

- LO 1. Understand the fundamental concepts of statistics, data representation, measures of central tendency, and measures of dispersion for effective data analysis.
- LO 2. Apply probability concepts and statistical methods to solve problems encountered in Artificial Intelligence and Machine Learning.
- LO 3. Analyze relationships among variables using correlation and regression techniques to interpret data and support predictive decision-making.
- LO 4. Develop the ability to analyze real-world datasets using statistical techniques and computational tools to derive meaningful insights for AI and Machine Learning applications

Course Outcomes:

After completion of the course, students will be able to-

- CO 1. Explain the fundamental concepts of statistics, data representation, frequency distributions, and measures of central tendency for analyzing datasets
- CO 2. Apply measures of dispersion to evaluate variability and consistency in statistical data.
- CO 3. Solve probability problems involving random experiments, events, conditional probability, and apply these concepts to AI and Machine Learning applications.
- CO 4. Analyze relationships among variables using correlation and regression techniques to support predictive analysis and data-driven decision making.

Unit No.	Title of Unit & Contents	Hrs.
I	Unit I: Fundamentals of Statistics and Data Representation	16
	➤ Introduction to Statistics ➤ Types of Data ➤ Population and Sample ➤ Variables and Attributes ➤ Frequency Distribution and cumulative frequency distribution ➤ Histogram ➤ Frequency Polygon ➤ Ogive Curve ➤ Bar Diagram and Pie Chart ➤ Measures of Central Tendency • Arithmetic Mean	

Unit No.	Title of Unit & Contents	Hrs.
	• Median • Mode • Quartiles ➤ Applications in AI & ML Dataset Analysis Unit Outcomes: UO 1. Explain the fundamental concepts of statistics, including types of data, variables, population and sample, frequency distributions, and graphical methods of data representation. UO 2. Compute and interpret measures of central tendency (mean, median, mode) and quartiles to summarize datasets and analyze AI & ML data effectively	
II	Measures of Dispersion	10
	➤ Range ➤ Quartile Deviation ➤ Mean Deviation ➤ Variance ➤ Standard Deviation ➤ Coefficient of Variation Unit Outcome: UO 1. Calculate and interpret various measures of dispersion, including range, quartile deviation, mean deviation, variance etc. UO 2. Compare the consistency and spread of different datasets using appropriate measures and apply these techniques to analyze real-world AI and ML datasets	
III	Probability	10
	➤ Random Experiment ➤ Sample Space ➤ Events ➤ Types of Events ➤ Classical Probability ➤ Conditional Probability ➤ Independent Events ➤ Applications in AI Classification Unit Outcomes: UO 1. Explain the fundamental concepts of probability. UO 2. Apply probability concepts to analyze uncertainty and support decision-making in AI and ML applications	
IV	Correlation, Regression	09
	Correlation 1. Scatter Diagram 2. Karl Pearson's Correlation Coefficient 3. Spearman Rank Correlation 4. Interpretation of Correlation Regression 1. Regression Lines 2. Linear Regression Concept Unit Outcomes: UO 1. Analyze the strength and direction of relationships between variables using scatter diagrams, Karl Pearson's correlation coefficient.	

Unit No.	Title of Unit & Contents	Hrs.
	UO 2. Apply regression concepts and decision-making in AI and Machine Learning applications.	

Learning Resources:

1. Gupta, S. C., & Kapoor, V. K. Fundamentals of Mathematical Statistics. Sultan Chand & Sons, New Delhi.
2. Gupta, S. P. Statistical Methods. Sultan Chand & Sons, New Delhi.
3. Walpole, R. E., Myers, R. H., Myers, S. L., & Ye, K. Probability and Statistics for Engineers and Scientists. 9th Edition, Pearson Education.
4. Ross, S. M. A First Course in Probability. 10th Edition, Pearson Education.
5. Montgomery, D. C., & Runger, G. C. Applied Statistics and Probability for Engineers. 7th Edition, Wiley.
6. Freedman, D., Pisani, R., & Purves, R. Statistics. 4th Edition, W. W. Norton & Company.
7. Devore, J. L. Probability and Statistics for Engineering and the Sciences. 10th Edition, Cengage Learning.
8. James, G., Witten, D., Hastie, T., & Tibshirani, R. An Introduction to Statistical Learning: With Applications in R. 2nd Edition, Springer.
9. Hastie, T., Tibshirani, R., & Friedman, J. The Elements of Statistical Learning. 2nd Edition, Springer.
10. Han, J., Kamber, M., & Pei, J. Data Mining: Concepts and Techniques. 4th Edition, Morgan Kaufmann.
11. Fundamentals of Mathematical Statistics by S. C. Gupta and V. K. Kapoor.
12. Probability and Statistics for Engineering and the Sciences by Jay L. Devore.

Internal Examination Pattern:

CAT – I: Assignment Based / Surprise Test

CAT – II: Google Form Online Test / Seminar

Mapping of POs, PSOs and COs:

COs	POs								PSOs					
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	3	1	1	2	0	1	1	1	2	2	2	1	1	1
CO2	2	2	3	2	1	2	2	1	2	2	1	2	2	1
CO3	2	2	3	2	1	2	2	1	2	2	1	3	1	2
CO4	3	2	3	2	2	2	2	2	3	3	2	3	2	2

Scale: 3 = High, 2 = Moderate, 1 = Low, 0 = No correlation.



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Faculty of Science and Technology

Department of Information Technology

UG I Sem-I

Course Type: Lab Course

Course Title: Lab Course - II (Based on DSC-II)

Course Code:

Credits: 01

Max. Marks: 50

Lectures: 30 Hrs.

Learning Objectives:

- LO 1. Understand the fundamental concepts of statistics, data representation, measures of central tendency, and measures of dispersion for effective data analysis.
- LO 2. Apply probability concepts and statistical methods to solve problems encountered in Artificial Intelligence and Machine Learning.
- LO 3. Analyze relationships among variables using correlation and regression techniques to interpret data and support predictive decision-making.
- LO 4. Develop the ability to analyze real-world datasets using statistical techniques and computational tools to derive meaningful insights for AI and Machine Learning applications

Course Outcomes:

After completion of the course, students will be able to-

- CO 1. Explain the fundamental concepts of statistics, data representation, frequency distributions, and measures of central tendency for analyzing datasets
- CO 2. Apply measures of dispersion to evaluate variability and consistency in statistical data.
- CO 3. Solve probability problems involving random experiments, events, conditional probability, and apply these concepts to AI and Machine Learning applications.
- CO 4. Analyze relationships among variables using correlation and regression techniques to support predictive analysis and data-driven decision making.

Practical No.	Unit
1	Construct histogram for given statistical data using MS-Excel.
2	Construct frequency polygon for given data using MS-Excel.
3	Draw frequency curve for given data using MS-Excel.
4	Draw and construct ogive for given statistical data using MS-Excel.
5	Construct simple bar diagram for given data using MS-Excel.
6	Construct subdivided bar diagram for given data using MS-Excel.
7	Draw pie diagram for given statistical data using MS-Excel.
8	Calculate mean for given datasets

9	Calculate median for given datasets.
10	Calculate mode for given datasets
11	Calculate quartile deviation and mean deviation for given datasets
12	Calculate Standard deviation and Coefficient of variation for given datasets
13	Calculate coefficient of Correlation for give datasets.
14	Calculate Regression for give datasets..

N.B.: Any ten practicals from above.

Mapping of POs, PSOs and COs:

COs	POs								PSOs					
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	3	1	1	2	0	1	1	1	2	2	2	1	1	1
CO2	2	2	3	2	1	2	2	1	2	2	1	2	2	1
CO3	2	2	3	2	1	2	2	1	2	2	1	3	1	2
CO4	3	2	3	2	2	2	2	2	3	3	2	3	2	2

Scale: 3 = High, 2 = Moderate, 1 = Low, 0 = No correlation.

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Faculty of Science and Technology

Department of Information Technology

UG I Sem-I

Course Type: VSC -I

Course Title: Digital Electronics Basics

Course Code:

Credits: 02

Max. Marks: 50

Lectures: 45 Hrs.

Learning Objectives:

- LO 1. To introduce number systems, codes and their conversions as used in digital data representation.
- LO 2. To explain logic gates and Boolean algebra as the basis of digital decision-making.
- LO 3. To introduce basic combinational logic circuits used in digital computing devices.
- LO 4. To build awareness of how digital electronics fundamentals underpin AI and Machine Learning technologies, for students from a non-science background.

Course Outcomes:

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

- CO 1. Explain number systems, codes, and perform conversions between them.
- CO 2. Describe logic gates and apply Boolean algebra to simplify logical expressions.
- CO 3. Design basic combinational logic circuits such as adders, encoders, decoders and multiplexers.
- CO 4. Relate digital electronics fundamentals to the working of computing systems that power AI and Machine Learning applications.

Unit No.	Title of Unit & Contents	Hrs.
I	Number Systems and Codes	5
	1. Number Systems: Binary, Decimal, Octal and Hexadecimal number systems; how digital computers use these systems to store and process the images, text and audio data used in AI and ML applications. 2. Base Conversions: Conversion between binary, decimal, octal and hexadecimal numbers. 3. Binary Arithmetic: Binary addition and subtraction using 1's and 2's complement methods. 4. Codes: BCD, Gray Code and ASCII/Unicode; relating character encoding to how text is represented as numbers for Natural Language Processing (NLP) tasks such as chatbots and translation tools. Unit Outcomes: UO 1. Explain number systems and perform conversions between them. UO 2. Describe how binary codes are used to represent data (text, images) used in AI/ML systems.	
II	Logic Gates and Boolean Algebra	4
	1. Basic Gates (AND, OR, NOT): Truth table, definition, Boolean expression and symbol; introducing gate logic as the simplest form of "decision making" that later inspires rule-based AI systems.	

Unit No.	Title of Unit & Contents	Hrs.
	2. Universal Gates (NAND, NOR): Truth table, definition, Boolean expression and symbol; universal property and design of basic gates using NAND/NOR. 3. De Morgan's Theorems, Basic laws of Boolean algebra and simplification of Boolean expressions. 4. AI Hardware : Basic Concepts- GPU, FPGA, TPU/NPU. Unit Outcomes: UO 1. Explain the working of basic and universal logic gates. UO 2. Apply Boolean laws to simplify logical expressions and relate this simplification to rule-based decision systems used in AI.	
III	Digital Circuits	3
	1. Combinational Circuits — Adders: Design of Half Adder and Full Adder; these arithmetic building blocks are the foundation of the processors (CPU/GPU) that carry out the massive calculations required for training AI and ML models. 2. Encoder and Decoder: Basic concept, function and simple design; relating encoding/decoding of digital signals to how AI systems encode raw data (images, categories, words) into numerical form that a model can process. Unit Outcomes: UO 1. Design and illustrate basic combinational logic circuits (adder, encoder, decoder). UO 2. Relate the function of basic digital circuits to the computing hardware that powers AI/ML applications.	
IV	Foundations of Computing for AI/ML	3
	1. Multiplexer and De-multiplexer: Basic concept and function of 4:1 Multiplexer and 1:4 De-multiplexer 2. From Circuits to Computers: Applications of Digital Electronics in AI, Machine Learning, IOT, Robotics and Edge AI. Unit Outcomes: UO 1. Design and illustrate basic combinational logic circuits multiplexer. UO 2. Relate the function of basic digital circuits to the computing hardware that powers AI/ML applications.	
V	Practicals (Based on Units I to IV)	30
	1. Perform an experiment to verify the truth tables of basic gates (AND, OR, NOT). 2. Perform an experiment to verify the truth tables of universal gates (NAND, NOR). 3. Perform an experiment to verify the truth tables of EX-OR and EX-NOR gates. 4. Perform an experiment to verify the universal property of NAND gate. 5. Perform an experiment to verify the universal property of NOR gate. 6. Implement and verify a Boolean expression using logic gates and simplify it using Boolean laws. 7. Convert numbers between binary, decimal, octal and hexadecimal systems (manual worksheet exercise). 8. Study a simple block diagram showing how logic circuits relate to a computer system used for AI/ML processing (activity-based, non-technical exercise for beginners).	

Unit No.	Title of Unit & Contents	Hrs.
	UO 1. Perform basic digital electronics experiments using simple kits/simulators. UO 2. Correlate hands-on circuit experiments with the working of digital computing systems used in AI/ML.	

Learning Resources:

1. Digital Electronics: Principles and Applications, Roger Tokheim, McGraw Hill Education, 2017.
2. Digital Computer Electronics, Albert Malvino, McGraw Hill Education, 2017.
3. Modern Digital Electronics, R.P. Jain, Fourth Edition, McGraw Hill, 2009.
4. Digital Electronics, G.K. Kharate, Oxford, 2010.
5. Computer System Architecture, M. Morris Mano, Second Edition, Prentice Hall of India, 1982.
6. Artificial Intelligence: A Modern Approach, Stuart Russell & Peter Norvig, Pearson (for introductory context on how computing fundamentals relate to AI).
7. NPTEL / SWAYAM introductory video lectures on "Digital Logic and AI Foundations" (online, beginner-friendly, non-mathematical modules recommended for Arts-background learners).

Internal Examination Pattern:

CAT – I: Assignment Based / Surprise Test

CAT – II: Google Form Online Test / Seminar

Mapping of POs, PSOs and COs:

COs	POs								PSOs					
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO4	PS O5	PSO 6
CO1	3	1	2	2	1	1	1	1	1	3	1	2	0	1
CO2	2	1	3	2	0	2	1	1	1	3	0	2	2	1
CO3	3	2	2	2	0	1	1	2	2	3	1	2	1	1
CO4	3	2	2	3	1	2	2	2	2	3	0	3	0	2

Scale: 3 = High, 2 = Moderate, 1 = Low, 0 = No correlation.



Semester - II

लातूर

॥ आरोह तमसो ज्योतिः॥

Rajarshi Shahu Mahavidyalaya,
Latur (Autonomous)



Rajarshi Shahu Mahavidyalaya, Latur

Empowered Autonomous Institution

Faculty of Science and Technology

Department of Information Technology

UG I Sem-II

Course Type: DSC-III

Course Title: Object-Oriented Programming using Python

Course Code:

Credits: 03

Max. Marks: 75

Lectures: 45 Hrs.

Learning Objectives:

- LO 1. Create Python programs using classes, objects, constructors, variables, and methods.
- LO 2. Implement class members, access specifiers, and encapsulation in Python programs.
- LO 3. Apply abstraction and reusable programming techniques in Python applications.
- LO 4. Analyze the execution and behavior of object-oriented Python programs.

Course Outcomes:

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

- CO 1. Explain the fundamental concepts and features of Object-Oriented Programming in Python.
- CO 2. Develop Python programs using classes, objects, constructors, variables, and methods.
- CO 3. Apply encapsulation, abstraction, and access specifiers to design secure Python programs.
- CO 4. Implement and Analyze OOPs concepts, inheritance and polymorphism to develop reusable and efficient Python applications.

Unit No.	Title of Unit & Contents	Hrs.
I	Fundamentals of Object-Oriented Programming	12
	1. Introduction to Object-Oriented Programming 2. Procedural Programming vs Object-Oriented Programming 3. Features and Advantages of OOP 4. Classes and Objects 5. Use of self Keyword Unit Outcomes: UO 1. Explain the concepts and features of object-oriented programming. UO 2. Develop Python programs using classes, objects, constructors, and methods.	
II	Abstraction/Encapsulation and Class Members	13
	1. Class Variables and Instance Variables 2. Instance Methods, Class Methods and Constructors 3. Static Methods 4. Access Specifiers (Public, Protected, Private) 5. Encapsulation 6. Getter and Setter Methods 7. Abstract Classes 8. Abstract Methods	

Unit No.	Title of Unit & Contents	Hrs.
	Unit Outcomes: UO 1. Apply class members and methods in Python programs. UO 2. Implement encapsulation using access specifiers and property methods.	
III	Inheritance and Polymorphism	12
	1. Introduction to Inheritance 2. Types of Inheritance 3. Method Overriding 4. super() Function 5. Polymorphism Unit Outcomes: UO 1. Implement inheritance to improve code reusability UO 2. Apply polymorphism and abstraction in Python applications.	
IV	File Handling and Exception Handling	8
	1. Introduction to Files 2. File Modes, Opening and Closing Files 3. Reading Files, Writing Files, Appending Data 4. Introduction to Errors and Exceptions 5. Exception handling using try, except, else, finally Unit Outcomes: UO 1. Explain File and create File using Python. UO 2. Perform File operations using Python.	

Learning Resources:

1. Core Python Programming, Second Edition, Wesley J. Chun., Prentice Hall, 2001
2. Learning Python, 5th edition, Mark Lutz, O'Reilly
3. Programming Python, 4th Edition, O'Reilly
4. Mastering Object-Oriented Python (2nd Edition) by Steven F. Lott.
5. Python Object-Oriented Programming (4th Edition) by Steven F. Lott and Dusty Phillips.
6. Object-Oriented Programming with Python: Master Advanced OOP Concepts for Effective Software Design, Greyson Chesterfield, Kindle Edition
7. <https://www.python.org/>
8. <https://www.w3schools.com/python/>
9. <https://www.tutorialspoint.com/python/index.html>

Internal Examination Pattern:

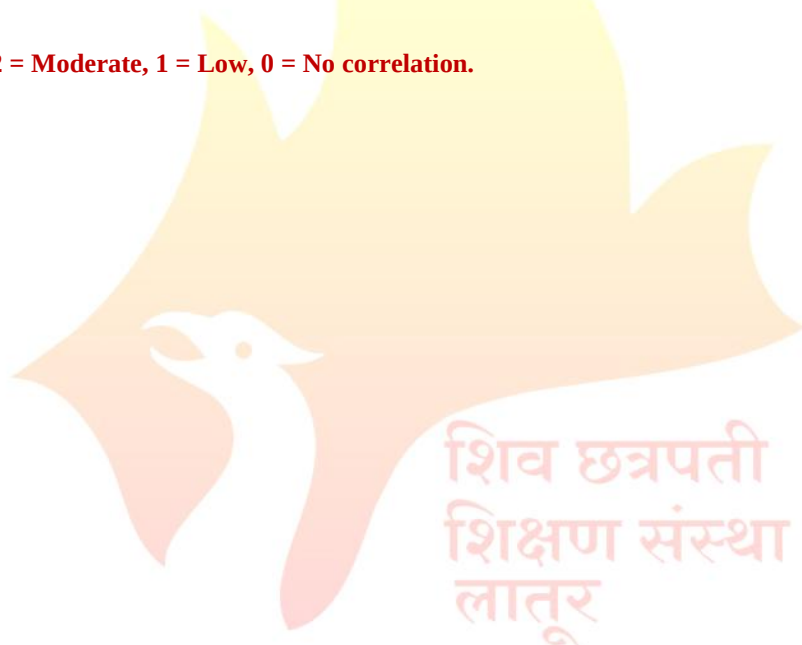
CAT – I: Assignment Based / Surprise Test

CAT – II: Google Form Online Test / Seminar

Mapping of POs, PSOs and COs:

COs	POs								PSOs					
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	1	1	0	0	0	1	0	3	2	1	0	1	0
CO 2	3	3	2	2	1	1	2	0	3	3	1	2	0	0
CO 3	3	3	2	2	0	0	2	1	3	3	2	2	0	1
CO 4	3	3	2	3	1	0	2	2	2	3	2	3	1	1

Scale: 3 = High, 2 = Moderate, 1 = Low, 0 = No correlation.



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**Rajarshi Shahu Mahavidyalaya,
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Rajarshi Shahu Mahavidyalaya, Latur

Empowered Autonomous Institution

Faculty of Science and Technology

Department of Information Technology

UG I Sem-II

Course Type: Lab Course

Course Title: Lab Course –III (Based on DSC-III)

Course Code:

Credits: 01

Max. Marks: 50

Lectures: 30 Hrs.

Learning Objectives:

- LO 1. Create Python programs using classes, objects, constructors, variables, and methods.
- LO 2. Implement class members, access specifiers, and encapsulation in Python programs.
- LO 3. Apply abstraction and reusable programming techniques in Python applications.
- LO 4. Analyze the execution and behavior of object-oriented Python programs.

Course Outcomes:

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

- CO 1. Explain the fundamental concepts and features of Object-Oriented Programming in Python.
- CO 2. Develop Python programs using classes, objects, constructors, variables, and methods.
- CO 3. Apply encapsulation, abstraction, and access specifiers to design secure Python programs.
- CO 4. Implement and Analyze OOPs concepts, inheritance and polymorphism to develop reusable and efficient Python applications.

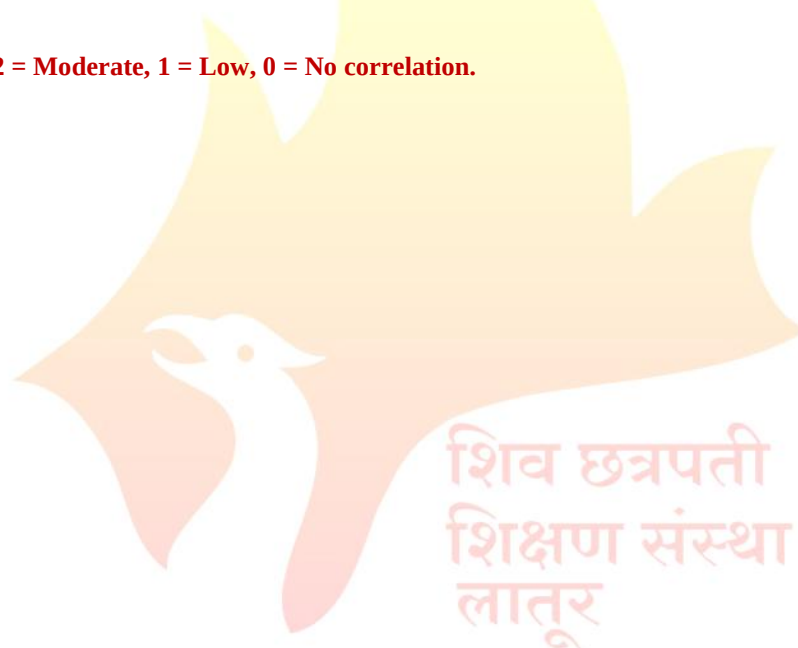
Practical No.	Unit
1	Write a Python Program to Create a Class and Object.
2	Write a Python Program to Demonstrate the self Keyword.
3	Write a Python Program to Demonstrate Instance Variables and Instance Methods.
4	Write a Python Program to Demonstrate Constructors (<code>__init__()</code>).
5	Write a Python Program to Demonstrate Class Variables and Instance Variables.
6	Write a Python Program to Demonstrate Public, Protected, and Private Members.
7	Write a Python Program to Implement Encapsulation Using Getter and Setter Methods.
8	Write a Python Program to Demonstrate Single Inheritance.
9	Write a Python Program to Demonstrate Multilevel Inheritance.
10	Write a Python Program to Demonstrate Method Overriding Using the <code>super()</code> Function.
11	Write a Python Program to Demonstrate Polymorphism.
12	Write a Python Program to Create a File.
13	Write a Python Program to Create a Class and Object.

N.B.: Any Ten Practicals from above.

Mapping of POs, PSOs and COs:

COs	POs								PSOs					
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	1	1	0	0	0	1	0	3	2	1	0	0	0
CO 2	3	3	2	2	1	1	2	0	3	3	1	2	0	0
CO 3	3	3	2	2	0	0	2	1	3	3	2	2	0	1
CO 4	3	3	2	3	1	0	2	2	2	3	2	3	1	1

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Empowered Autonomous Institution

Faculty of Science and Technology

Department of Information Technology

UG I Sem-II

Course Type: DSC-IV

Course Title: Discrete Mathematics

Course Code:

Credits: 03

Max. Marks: 75

Lectures: 45 Hrs.

Learning Objectives:

- LO 1. To understand the concepts of set theory, functions and relations
- LO 2. To develop mathematical logic using concepts like Propositions, Tautology, etc.
- LO 3. To get acquainted with algebra of matrices and determinants
- LO 4. To study graph and tree concepts used in software, networking and fabricating circuits

Course Outcomes:

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

- CO 1. Demonstrate notations and operations of sets, functions and relations.
- CO 2. Construct compound statements using logical connectives and verify the validity
- CO 3. Apply operations of matrices and determinants in solving numerical problems
- CO 4. Construct graphs and trees to be used in software, networking and fabricating circuits

Unit No.	Title of Unit & Contents	Hrs.
I	Propositional Logic: Logic and Proofs	9
	Propositions, Truth values and truth table, Logical connectives and compound statements, Statement pattern and logical equivalence, Tautology, Contradiction, Contingency, Probability, Permutation and Combination.	
	Unit Outcomes: UO 1. Identify and prove the mathematical statement based on truth table	
II	Sets, Functions and Relations	15
	Sets: Definition and types of sets, Equal sets, Subsets, Cardinal of sets, Universal sets, Venn diagram, Set operations, Properties of set union and intersection, Cartesian product. Function: Domain and co-domain, Range, Types of functions: Inverse function, one-to-one function, onto function, into function and composite function. Relation: Types of relation: Reflexive, Symmetric, Antisymmetric, Transitive, Equivalence and Partial order relation.	
	Unit Outcomes: UO 1. Understand the fundamental concepts of set theory, function and relation UO 2. Explain various types of functions and relations	
III	Matrices and Determinants	11

Unit No.	Title of Unit & Contents	Hrs.
	Definition and types of matrices, Equality of matrices, Transpose of matrices, Algebra of matrices: addition, subtraction, scalar, multiplication of matrices, Determinant and numerical examples. Unit Outcomes: UO 1. Analyze types of matrices while solving mathematical problems UO 2. Solve matrix and determinant related numerical problems	
IV	Graphs and Tree	10
	Graph Theory: Definition and types of graph, Incidences and degree of vertices, Subgraphs, Isomorphism of graphs, Connected and disconnected graphs, Walks, Paths and circuits, Directed graph, Operations on graphs. Tree: Definition, Eccentricity, Centre of tree, Binary Tree, Spanning tree, Cut sets and Cut vertices, Fundamental circuits, Edge connectivity and Vertex connectivity. Unit Outcome: UO 1. Make use of graphs and trees in software, networking and fabricating circuits	

Learning Resources:

1. Elements of Discrete Mathematics: A Computer Oriented Approach, C Liu, D. Mohapatra, 4th Edition, 2017
2. Discrete Mathematics, Olympia Nicodemi, Aakash, VISIONIAS, 2015
3. Mathematical Structures for Computer Science, Alon Doerr, K. Levasieur, University of Massachusetts Lowell
4. Graph Theory with Applications to Engineering and Computer Science, Narsingh Deo, Prentice Hall, 1979
5. Mittal and Agarwal, Basic Mathematics, S K Mittal, Anu Books, 2019
6. Discrete Mathematical Structures with Application to Computer Science, Tremblay and Manohar, McGraw Hill Book Company, 2017
7. Essential Discrete Mathematics for Computer Science, Harry Lewis, Rachel Zax, Princeton University Press, 2019

Internal Examination Pattern:

CAT – I: Assignment Based / Surprise Test

CAT – II: Google Form Online Test / Seminar

Mapping of POs, PSOs and COs:

COs	POs								PSOs					
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	1	2	1	1	0	1	0	2	2	1	1	1	1
CO 2	3	3	3	2	0	1	2	0	3	3	1	3	1	1
CO 3	3	3	3	2	1	1	2	1	3	3	1	3	0	2
CO 4	3	3	3	3	0	1	2	2	3	3	2	3	1	2

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Rajarshi Shahu Mahavidyalaya, Latur

Empowered Autonomous Institution

Faculty of Science and Technology

Department of Information Technology

UG I Sem-II

Course Type Lab Course

Course Title: Lab Course –IV (Based on DSC-IV)

Course Code:

Credits: 01

Max. Marks: 50

Lectures: 30 Hrs.

Learning Objectives:

- LO 1. To understand the concepts of set theory, functions and relations.
- LO 2. To develop mathematical logic using concepts like Propositions, Tautology, etc.
- LO 3. To get acquainted with algebra of matrices and determinants.
- LO 4. To study graph and tree concepts used in software, networking and fabricating circuits.

Course Outcomes:

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

- CO 1. Demonstrate notations and operations of sets, functions and relations.
- CO 2. Construct compound statements using logical connectives and verify the validity
- CO 3. Apply operations of matrices and determinants in solving numerical problems
- CO 4. Construct graphs and trees to be used in software, networking and fabricating circuits

Practical No.	Unit
1	Study of MATLAB environment
2	Study of basic commands used in MATLAB
3	Study of input output formatting of data
4	Study of various types of files used in MATLAB
5	Performing Trivial Calculations
6	Creating and printing simple 2D plot
7	Study of publishing report in HTML and Word document
8	Creating matrix and indexing
9	Accept elements from user and demonstrate working of various types of matrices
10	Solving algebra of matrix
11	Study of inverse and determinant of matrix

N.B.: Any Ten Practical from above.

Mapping of POs, PSOs and COs:

COs	POs								PSOs					
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	1	2	1	1	0	1	0	2	2	1	1	1	1
CO 2	3	3	3	2	1	1	2	0	3	3	1	3	1	1
CO 3	3	3	3	2	0	1	2	1	3	3	1	3	0	2
CO 4	3	3	3	3	1	1	2	2	3	3	2	3	1	2

Scale: 3 = High, 2 = Moderate, 1 = Low, 0 = No correlation.



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Empowered Autonomous Institution

Faculty of Science and Technology

Department of Information Technology

UG I Sem-II

Course Type: VSC-II

Course Title: Data Handling with Excel

Course Code:

Credits: 02

Max. Marks: 50

Lectures: 45 Hrs.

Learning Objectives:

- LO 1. To understand number systems, codes, and their conversions.
- LO 2. To explain logic gates and Boolean algebra concepts.
- LO 3. To design combinational logic circuits for digital applications.
- LO 4. To analyze sequential circuits and basic microprocessor concepts.

Course Outcomes:

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

- CO 1: Explain number systems, codes, and perform conversions.
- CO 2: Describe logic gates and apply Boolean algebra.
- CO 3: Design combinational logic circuits such as adders, encoders, and multiplexers.
- CO 4: Illustrate sequential circuits and explain basic microprocessor architecture.

Unit No.	Title of Unit & Contents	Hrs.
I	Number System and Codes	5
	Number System: Binary number system, decimal number system, octal number system, hexadecimal number system. - Bases inter conversions - Binary Subtraction using 1's and 2's complement method - Decimal subtraction using 9's and 10's complement method Codes: BCD, GRAY, EXCESS-3.	
	Unit Outcomes: UO 1. Explain number systems and their conversions UO 2. Differentiate codes used in computer	
II	Logic Gates and Boolean Algebra	4
	Basic gates (AND, OR, NOT): Truth table, Definition, Boolean expression and symbols	

	2. Universal gates (NAND, NOR): Truth table, Definition, Boolean expression and symbols, Design of basic gates using NAND and NOR gates, Universal property of NAND and NOR gates 3. Demorgan's Theorems: Theorem, Proofs, Formula and Examples 4. Boolean Algebra: Fundamental concepts of Boolean algebra, Symbol, Boolean equation, Basic laws of Boolean algebra and simplification of Boolean expressions.	
	Unit Outcomes: UO 1. Explain the operation of basic and universal logic gates UO 2. Apply Boolean laws for minimizing Boolean expressions	
III	Combination Logic Circuits	3
	Combination logic: Introduction, Design procedure, Design of half adder and full adder, half subtractor and full subtractor, Encoder, Decoder, Multiplexer (4:1 and 8:1), De-multiplexer (1:4 and 1:8).	
	Unit Outcomes: UO 1. Design and illustrate various combinational logic circuits. UO 2. Explain working of microprocessor	
IV	Sequential Logic Circuits and Microprocessor	3
	1. Sequential logic: Introduction, Flip-flops- SR flip flop, D flip flop, JK flip flop and T flip flop. 2. Microprocessors: Introduction, Basic components of microprocessor.	
	Unit Outcomes: UO 1. Implement and illustrate various sequential logic circuits. UO 2. Explain working of microprocessor	
V	Practicals (Based on above 4 units)	30
	1. Perform an experiment to verify the truth tables of basic gates. 2. Perform an experiment to verify the truth tables of derived gates. 3. Perform an experiment to verify the truth tables of EX-OR and EX-NOR gate 4. Perform an experiment to verify the universal property of NAND gate. 5. Perform an experiment to verify the universal property of NOR gate. 6. Implement and verify the truth table of Demorgan's Theorem. 7. Implement and verify the truth table of any two Boolean equations 8. Implement and verify the truth table of half adder and full adder. 9. Implement and verify the truth table of multiplexer. 10. Study of microprocessor block diagram and identify its components.	

Learning Resources:

1. Computer System Architecture, M. Moris Mano, Second Edition, Prentice Hall of India, 1982
2. Computer Systems Design and Architecture, Heuring and Jordan, Pearson Education, 1996
3. Computer Organization and Architecture, William Stallings, Pearson Education 2003
4. Structured Computer Organization, Andrew S Tenenbaum, Third Edition, Prentice Hall of India (1990)
5. Modern Digital Electronics, R.P. Jain, Fourth edition, Mc Graw Hill, 2009
6. Digital electronics, G.K. Kharate, Oxford, 2010
7. Digital Computer Electronics, Albert Malvino, McGraw Hill Education, 2017
8. Digital Electronics: Principles and Applications, Roger Tokheim, McGraw Hill Education, 2017
9. Digital Electronics: An Introduction to Theory and Practice, Gothmann W.H., Prentice Hall India Learning Private Limited, 1982
10. Introduction to Electronic Devices, Michael Shur, John Wiley & Sons Inc., 2000.

Internal Examination Pattern:

CAT – I: Assignment Based / Surprise Test

CAT – II: Google Form Online Test / Seminar

Mapping of POs, PSOs and COs:

COs	POs								PSOs					
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	1	2	1	1	0	1	0	2	2	1	1	1	1
CO 2	3	2	2	1	1	0	1	0	3	2	2	1	1	1
CO 3	3	3	2	2	0	1	2	1	3	3	2	3	0	1
CO 4	3	3	2	2	1	1	2	1	3	3	3	2	1	2



Shiv Chhatrapati Shikshan Sanstha's
Rajarshi Shahu Mahavidyalaya, Latur
Empowered Autonomous Institution
Extra Credit Activities

Sr. No.	Course Title	Credits	Hours T/P
1	MOOCs	Min. of 02 credits	Min. of 30 Hrs.
2	Certificate Courses	Min. of 02 credits	Min. of 30 Hrs.
3	IIT Spoken English Courses	Min. of 02 credits	Min. of 30 Hrs.

Guidelines:

Extra -academic activities

1. All extra credits claimed under this heading will require sufficient academic input/ contribution from the students concerned.
2. Maximum 04 extra credits in each academic year will be allotted.
3. These extra academic activity credits will not be considered for calculation of SGPA/CGPA but will be indicated on the grade card.

Additional Credits for Online Courses:

1. Courses only from SWAYAM and NPTEL platform are eligible for claiming credits.
2. Students should get the consent from the concerned subject Teacher/Mentor/Vice Principal and Principal prior to starting of the course.
3. Students who complete such online courses for additional credits will be examined/verified by the concerned mentor/internal faculty member before awarding credits.
4. Credit allotted to the course by SWAYAM and NPTEL platform will be considered as it is.

Additional Credits for Other Academic Activities:

1. One credit for presentation and publication of paper in International/National/State level seminars/workshops.
2. One credit for measurable research work undertaken and field trips amounting to 30 hours of recorded work.
3. One credit for creating models in sponsored exhibitions/other exhibits, which are approved by the concerned department.
4. One credit for any voluntary social service/Nation building exercise which is in collaboration with the outreach center, equivalent to 30 hours
5. All these credits must be approved by the College Committee.

Additional Credits for Certificate Courses:

1. Students can get additional credits (number of credits will depend on the course duration) from certificate courses offered by the college.
2. The student must successfully complete the course. These credits must be approved by the Course Coordinators.
3. Students who undertake summer projects/ internships/ training in institutions of repute through a national selection process, will get 2 credits for each such activity. This must be done under the supervision of the concerned faculty/mentor.

Note:

1. The respective documents should be submitted within 10 days after completion of Semester End Examination.
2. No credits can be granted for organizing or for serving as office bearers/ volunteers for Inter-Class / Associations / Sports / Social Service activities.
3. The office bearers and volunteers may be given a letter of appreciation by the respective staff coordinators. Besides, no credits can be claimed for any services/activities conducted or attended within the college.
4. All claims for the credits by the students should be made and approved by the mentor in the same academic year of completing the activity.
5. Any grievances of denial/rejection of credits should be addressed to Additional Credits Coordinator in the same academic year.
6. Students having a shortage of additional credits at the end of the third year can meet the Additional Credits Coordinator, who will provide the right advice on the activities that can help them earn credits required for graduation.

Rajarshi Shahu Mahavidyalaya,
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Empowered Autonomous Institution

Examination Framework

Theory:

40% Continuous Assessment Tests (CATs) and 60% Semester End Examination (SEE)

Practical:

50% Continuous Assessment Tests (CATs) and 50% Semester End Examination (SEE)

Course	Marks	CAT & Mid Term Theory				CAT Practical		Best Scored CAT & Mid Term	SEE	Total
1	2	3				4		5	6	5 + 6
		Att.	CAT I	Mid Term	CAT II	Att.	CAT			
DSC/DSE/GE/OE/Minor	100	10	10	20	10	-	-	40	60	100
DSC	75	05	10	15	10	-	-	30	45	75
Lab Course/AIPC/OJT/FP/SEC(Science & Technology)	50	-	-	-	-	05	20	-	25	50
VSC/SEC/AEC/VEC/CC	50	05	05	10	05	-	-	20	30	50

Note:

1. All Internal Exams are compulsory
2. Out of 02 CATs best score will be considered
3. Mid Term Exam will be conducted by the Exam Section
4. Mid Term Exam is of Objective nature (MCQ)
5. Semester End Exam is of descriptive in nature (Long & Short Answer)
6. CAT Practical (20 Marks): Lab Journal (Record Book) 10 Marks, Overall Performance 10 Marks