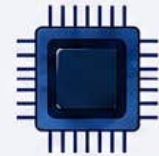
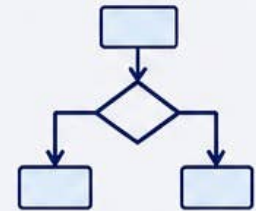




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Syllabus



Major Course (Elective-1 Laboratory): Laboratory on Data Science

Level	Semester	Course Code	Course Name	Credits	Teaching Hours	Exam Duration	Max Marks
5.5	V	112220	Laboratory on Data Science	2	60	4Hrs	50

Course Objectives:	1. To understand basic Data Science tools and techniques through hands-on practice. 2. To perform data collection, preprocessing, and visualization using Python. 3. To apply statistical and machine learning concepts on datasets. 4. To develop problem-solving and analytical skills using Data Science methods.						
Course Outcomes:	On completion of the following syllabus the students will be able to - 1. Identify and use basic Data Science tools and Python libraries. 2. Apply preprocessing and visualization techniques on datasets. 3. Analyze datasets using statistical and machine learning methods. 4. Develop simple Data Science solutions for real-world problems.						
Contents:					Workload Allotted	Weightage of Marks Allotted	Incorporation of Pedagogies
	List of Practical: 1. Study and installation of Python and Jupyter Notebook for Data Science. 2. Write a Python program to perform basic mathematical operations. 3. Implement different reshape functions in NumPy such as reshape(), resize(). 4. Implement different ways of concatenating arrays in NumPy using functions. 5. Implement array splitting functions in NumPy such as split(), hsplit(). 6. Implement different random number generation functions in NumPy using the random module. 7. To perform various statistical operations on NumPy arrays such as min, max, sum, mean, median, var, std, and percentile. 8. To study and implement array creation in NumPy. 9. Access array elements using indexing and slicing techniques. 10. To study and implement different arithmetic operations on NumPy arrays, including element-wise operations and scalar operations. 11. To study and implement different matrix operations in NumPy.						Use any pedagogical technique suitable for the topic

	12. To study and implement different string operations in NumPy using the numpy. char module. 13. To study and implement sorting and searching operations in NumPy arrays using functions. 14. To study and implement creation of Series in Pandas and access their elements using indexing and slicing. 15. To study and perform basic operations on Pandas DataFrame. 16. To study and implement data selection, filtering, and conditional operations on Pandas DataFrames. 17. To study and implement techniques for detecting, removing, and replacing missing data (NaN values) in Pandas DataFrames 18. To study and implement reading and writing operations in Pandas using different file formats such as CSV, Excel, and JSON. 19. To study and implement data visualization using Pandas plotting functions. 20. To study and implement data visualization using Matplotlib.			
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Assessment Rubric: External Practical Course

SANT GADGE BABA AMRAVATI UNIVERSITY, AMRAVATI PRACTICAL EXAMINATION B.Sc. III, SEMESTER – V (NEP)				
Practical	Course Code: 112220	Laboratory on Data Science	Max Marks: 25	Time: 4 Hrs.
Sr. No.	Exercise			Marks
1.	Single Program Writing, Algorithm, Flowchart, Execution, with Sample inputs and Outputs, and Printout			10
2.	Submitted Record book (Preferably handwritten)			05
3.	External Viva Voce			10

Assessment Rubric: Internal Practical Course

SANT GADGE BABA AMRAVATI UNIVERSITY, AMRAVATI PRACTICAL EXAMINATION B.Sc. III, SEMESTER – V (NEP)			
Practical	Course Code: 112220	Laboratory on Data Science	Max Marks: 25
Sr. No.	Assessment Criteria		Marks
1.	Attendance/Regularity in practical's / Students' overall performance		05
2.	Record book Preparation (Preferably handwritten)		10
3.	Internal Viva Voce		10