

Kurukshetra University, Kurukshetra
(Established by the State Legislature Act XII of 1956)
(‘A+’ Grade, NAAC Accredited)

॥ योगस्थः कुरु कर्माणि ॥
समबुद्धि व योग युक्त होकर कर्म करो
(Perform Actions while Stead fasting in the State of Yoga)



Modified Scheme of Examination for Under-Graduate Programmes

Subject: Computer Science

according to

Curriculum Framework for Under-Graduate Programmes

As per NEP-2020 (Multiple Entry-Exit, Internships and Choice Based Credit System)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS

(For the Batches Admitted From 2025-2026)

Kurukshetra University Kurukshetra
Scheme of Examination for Undergraduate programmes
Subject: Computer Science
According to
Curriculum Framework for Undergraduate Programmes
as per NEP 2020 (Multiple Entry-Exit, Internships and Choice Based Credit System)

Sem	Course Type	Course Code	Nomenclature of paper	Credits	Contact hours	Internal marks	End term Marks	Total Marks	Duration of exam (Hrs) T + P
1	CC-1 MCC-1	B23-CSE-101	Problem Solving through C	3	3	20	50	70	3
			Practical	1	2	10	20	30	3
	MCC-2	B23-CSE-102	Computer Fundamentals	3	3	20	50	70	3
			Practical	1	2	10	20	30	3
	CC-M1	B23-CSE-103	Basics of Computer Science	1	1	10	20	30	3
			Practical	1	2	5	15	20	3
	MDC 1	B23-CSE-104	Fundamentals of Computer Science	2	2	15	35	75	3
			Practical	1	2	5	20	25	3
2	CC-2 MCC-3	B23-CSE-201	Web Development	3	3	20	50	70	3
			Practical	1	2	10	20	30	3
	DSEC-1	B23-CSE-202	Programming with C++	3	3	20	50	70	3
			Practical	1	2	10	20	30	3
	CC-M2		Programming Methodologies	1	1	10	20	30	3

			B23-CSE-203	Practical	1	2	5	15	20	3
		MDC 2	B23-CSE-204	Web Technologies Fundamentals	2	2	15	35	50	3
				Practical	1	2	5	20	25	3
3		CC-3 MCC-4	B23-CSE-301	Operating Systems	3	3	20	50	70	3
				Practical	1	2	10	20	30	3
		MCC-5	B23-CSE-302	Quantitative Foundations of Computer Science	3	3	20	50	70	3
				Practical	1	2	10	20	30	3
		MDC 3	B23-CSE-303	Programming with C	2	2	15	35	50	3
				Practical	1	2	5	20	25	3
		CC-M2	B23-CSE-304	Programming using Python	1	1	10	20	30	3
				Practical	1	2	5	15	20	3
4		CC-4 MCC-6	B23-CSE-401	Data Management with DBMS	3	3	20	50	70	3
				Practical	1	2	10	20	30	3
		MCC-7	B23-CSE-402	Introduction to Computer System Design and Organization	3	3	20	50	70	3
				Practical	1	2	10	20	30	3
		MCC-8	B23-CSE-403	Object-Oriented Programming with Java	3	3	20	50	70	3
				Practical	1	2	10	20	30	3
		DSE-1	B23-CSE-404	Front-end Development	3	3	20	50	70	3
				Practical	1	2	10	20	30	3

			Practical	1	2	10	20	30	3
	DSE-4	B23-CSE-603	Developing Modern Web Applications using React	3	3	20	50	70	3
			Practical	1	2	10	20	30	3
		Or							
		B23-CSE-604	Data Storage Technologies and Networks using AWS	3	3	20	50	70	3
			Practical	1	2	10	20	30	3
	DSE-5	B23-CSE-605	Data Analytics using Python	3	3	20	50	70	3
			Practical	1	2	10	20	30	3
		Or							
		B23-CSE-606	Data Analytics using R	3	3	20	50	70	3
			Practical	1	2	10	20	30	3
7	CC-H1	B23-CSE-701	Principles & Paradigms of Programming Languages	4	4	30	70	100	3
	CC-H2	B23-CSE-702	Software Testing	4	4	30	70	100	3
	CC-H3	B23-CSE-703	Data Mining and Warehousing	4	4	30	70	100	3
	DSE-6	B23-CSE-704	NoSQL Databases	4	4	30	70	100	3

8		Or							
		B23-CSE-705	Artificial Intelligence	4	4	30	70	100	3
	PC-H1	B23-CSE-706	Practical	4	8	30	70	100	6
	CC-H4	B23-CSE-801	Emerging Trends in Information Security	4	4	30	70	100	3
	CC-H5	B23-CSE-802	Principles of Design and Analysis of algorithms	4	4	30	70	100	3
	CC-H6	B23-CSE-803	Software Project Management	4	4	30	70	100	3
	DSE-7	B23-CSE-804	Big Data	4	4	30	70	100	3
		Or							
		B23-CSE-805	Machine Learning	4	4	30	70	100	3
	PC-H2	B23-CSE-806	Practical (Advanced Web Frameworks)	4	8	30	70	100	6
	OR								
	CC-H4	B23-CSE-801	Emerging Trends in Information Security	4	4	30	70	100	3
	CC-H5	B23-CSE-802	Principles of Design and Analysis of algorithms	4	4	30	70	100	3

	Research	B23-CSE-807	Project/ Dissertation	12				300	
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Syllabus of Examination for Under-Graduate Programmes
Subject: Computer Science
Minor to be offered to other Department
according to
Curriculum Framework for Under-Graduate Programmes
As per NEP-2020 (Multiple Entry-Exit, Internships and Choice Based Credit System)
DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS
(2025-2026)

DEPARTMENT OF COMPUTER SCIENCE & APPLICATIONS
KURUKSHETRA UNIVERSITY, KURUKSHETRA

Scheme: 2025-26, Syllabus: 2025-26			
Part A – Introduction			
Subject	Computer Science		
Semester	III		
Name of the Course	Programming using Python		
Course Code	B23-CSE-304		
Course Type: (CC/MCC/MDC/CC-M/DSEC/VOC/DSE/PC/AEC/VAC)	CC-M3		
Level of the course (As per Annexure-I)	200-299		
Pre-requisite for the course (if any)	Knowledge of Basics of Programming using Python		
Course Learning Outcomes(CLO):	After completing this course, the learner will be able to: 1. Understand and write Python syntax. 2. Use data types, operators, and control structures. 3. Define and use functions and modules. 4. Implement real-world solutions using Python's built-in features and file handling.		
Credits	Theory	Practical	Total
	3	1	4
Contact Hours	3	2	5
Max. Marks:100(70(T)+30(P)) Internal Assessment Marks:30(20(T)+10(P)) End Term Exam Marks: 70(50(T)+20(P))		Time: 3 Hrs.(T), 3Hrs.(P)	
Part B- Contents of the Course			
<u>Instructions for Paper-Setter</u> The examiner will set a total of nine questions. Out of which first question will be compulsory. Remaining eight questions will be set from four unit selecting two questions from each unit. The examination will be of three-hour duration. All questions will carry equal marks. The first question will comprise short answer-type questions covering the entire syllabus. Candidate will have to attempt five questions in all, selecting one question from each unit. First question will be compulsory. The practicum will be evaluated by an external and an internal examiner. The examination will be of			

three-hour duration.

Unit	Topics	Contact Hours
I	Introduction to Python: setting up Python environment, writing and executing Python scripts, variables and data types, input/output, type casting, comments, operators (arithmetic, relational, logical, assignment, bitwise, identity, membership)	11
II	Control structures: conditional statements (if, if-else, elif), loops (for, while), loop control (break, continue, pass), range and enumerate functions, nested loops, basic problem-solving using loops	11
III	Functions: built-in functions, user-defined functions, function arguments and return values, scope and lifetime of variables, recursion, lambda functions, modules and importing, creating and using custom modules	11
IV	Data structures in Python: lists, tuples, sets, dictionaries, list/set/dictionary comprehensions, file handling: reading and writing text and CSV files, exception handling: try, except, finally, raising exceptions	12
V*	Practicum: Students are advised to do laboratory/practical practice not limited to but including the following types of problems: 1. Write and execute a “Hello, World!” program 2. Input/output programs using variables and data types 3. Implement arithmetic and logical operations 4. Write Python code for conditional branching (if-else) 5. Use loops to generate patterns and process lists 6. Create user-defined functions with parameters 7. Use recursion to calculate factorial/Fibonacci series 8. Create and use modules (including built-in like math, random) 9. Perform operations on lists, tuples, sets, and dictionaries 10. File handling – read from and write to text files 11. Handle exceptions using try-except block	30

Suggested Evaluation Methods

Internal Assessment: ➤ Theory • Class Participation: 5 • Seminar/presentation/assignment/quiz/class test etc.: 5 • Mid-Term Exam: 10 ➤ Practicum • Class Participation: NA • Seminar/Demonstration/Viva-voce/Lab records etc.: 10 • Mid-Term Exam: NA	End-Term Examination: A three-hour exam for both theory and practicum. End Term Exam Marks: 70(50(T)+20(P))
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Part C-Learning Resources

Recommended Books/e-resources/LMS:

- **Mark Lutz**, *Learning Python*, O'Reilly Media
- **Allen B. Downey**, *Think Python*, O'Reilly
- **Eric Matthes**, *Python Crash Course*, No Starch Press
- **Zelle, John M.**, *Python Programming: An Introduction to Computer Science*
- Official Python Documentation – <https://docs.python.org/3>

*Applicable for courses having practical components.