

BIDAR UNIVERSITY BIDAR



BACHELOR OF SCIENCE IN COMPUTERSCIENCE SYLLABUS FOR UNDER GRADUATE STATE EDUCATION POLICY-2025

**WITH EFFECT FROM
THE ACADEMIC YEAR 2026-27**

Submitted by

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Curriculum Structure for B.Sc. Computer Science w. e. f 2026-27

Category	Course Code	Title of the Paper	Marks			Hours/ Week	Credits	Duration of Exams (Hrs.)
			IA	Semester End Exam (SEE)	Total			
SEMESTER V								
DSC05	SEPBSCCST05	Python Programming	20	80	100	4	4	3
	SEPBSCCSP05	Python Programming Lab	10	40	50	4	2	3
	Skill-2T		10	40	50	2	2	2
TOTAL: HOURS/CREDIT					200	10	8	
SEMESTER VI								
DSC06	SEPBSCCST06	Web Technology	20	80	100	4	4	3
	SEPBSCCSP06	Web Technology Lab	10	40	50	4	2	3
	Skill-3	Internship/Field Visit	--	50	50	2	2	2
TOTAL: HOURS/CREDIT					250	12	10	

Year	III	Course Code : SEPBSCCST05		Credits	04
Semester	V	Course Title : Python Programming		Hours	60
Course Pre-requisites, if any		NA			
Formative Assessment Marks: 20		Summative Assessment Marks: 80	Duration of SEE: 3 hrs		
Course Objectives	After completing this course satisfactorily, a student will be able to: - Understand the fundamentals of Python syntax, semantics, and structure. - Learn core programming concepts: variables, data types, operators, control flow, and functions. - Explore Python’s built-in data structures: lists, tuples, dictionaries, and sets. - Gain familiarity with object-oriented programming (OOP) in Python.				
Unit No.	Course Content			Hours	
UNIT I	Introduction: Features and Applications of Python, Python Versions, Installation of Python, Python Command line mode and IDEs, Simple Python program, Identifiers, Keywords, Statements and Expressions, Variables, Indentation, Comments.			10	
UNIT II	program structure, output function, input function ,data types, type operators and expressions, Control Flow: Types of Control Flow Statements-if, if-else, elif, while loop, break, continue Statements ,for loop, range() and exit() functions.			10	
UNIT III	Data structures – str, list, tuple, dict, set, user defined functions - variable number of arguments, default parameters, key value pairs as arguments, Data Storage, Data formatting.			15	
UNIT IV	Classes, Objects, Inheritance-Types of Inheritance, Errors and Exception Handling, Modules, Packages, Regular Expressions, File Handling.			15	
UNIT V	GUI Programming-tkinter Module-Windows and widgets, Layout Management-pack, grid, place, Relational databases-SQLite. Introduction to Data Visualization, Matplot Library, Different types of charts using Pyplot: Line Chart, BarChart , Histogram and Pie Chart.			10	
Recommended Learning Resources					
Reference Books:					
1. Bill Lubanovic,” Introducing Python- Modern Computing in Simple Packages”, O’Reilly Publication 2. Allen Downey, Jeffrey Elkner, Chris Meyers, “How to Think Like a Scientist –Learning with Python(1st Edition)”, Green Tea Press, 2002. 3. Charles Dierbach, “Introduction to Computer Science Using Python”, Wiley Publication. 4. Allen B. Downey, “Think Python-How to think like a computer scientist (1ST Edition)”, O’Reilly Publication.					

E-Resources:

Interactive Learning

1. **Python.org Official Tutorial** – The official and comprehensive beginner tutorial.
2. **W3Schools Python Tutorial** – Interactive examples and quizzes.
3. **LearnPython.org** – Hands-on browser-based coding exercises.
4. **Codecademy: Learn Python** – Guided projects and interactive lessons.

Video Tutorials

1. **freeCodeCamp.org Python Course (YouTube)** – 4-hour full beginner's course.
2. **Programming with Mosh - Python for Beginners** – Very clear and structured.

Free Books

1. **Automate the Boring Stuff with Python** – Practical projects for beginners.
2. **Think Python** – Free eBook that teaches programming concepts through Python.

Practice & Challenges

1. **HackerRank – Python Track**
2. **LeetCode Python Problems**
3. **Exercism – Python Track** – Practice with mentoring support.

Tutorials & Guides

1. **Real Python** – In-depth tutorials and code walkthroughs.
2. **GeeksforGeeks Python Programming** – Great for algorithms and data structures.
3. **Python Tutor** – Visualize code execution step-by-step.

Advanced & Specialization

Machine Learning / Data Science

1. **Kaggle Learn Python** – Short hands-on data science lessons.
2. **DataCamp** – Paid, but has excellent data-focused Python courses.
3. **fast.ai** – Deep learning with Python (free).

Web Development & Automation

1. **Flask Mega-Tutorial by Miguel Grinberg** – Learn web development with Flask.
2. **Django Documentation** – For building full web apps.

Selenium with Python Docs – Browser automation.

Year	III	Course Code: SEPBSCCSP05	Credits	02
Semester	V	Course Title: Python Programming Lab	Hours	50
Course Pre-requisites, if any		Knowledge of Python Programming		
Formative Assessment Marks: 10		Summative Assessment Marks: 40	Duration of SEE: 3 hrs	

PART-A:

1. Write a Python program to perform Arithmetic operation.
2. Write a Python program to find largest of three numbers.
3. Write a Python program to find the square root and cube root of a number.
4. Write simple Python program to demonstrate use of 'if ... else' statement
5. Write a python program to find factorial of a given number using functions
6. Write Python program to perform following operations on Lists:
 - a) Create list
 - b) Access list
 - c) Update list (Add item, Remove item)
 - d) Delete list
7. Create a list and perform the following methods
 - a) Insert()
 - b) remove()
 - c) append()
 - d) len()
 - e) pop()
 - f) clear()
8. Create a dictionary and apply the following methods
 - a) Print the dictionary items
 - b) access items
 - c) use get()
 - d) change values
 - e) use len()

PART-B:

1. Create a tuple and perform the following methods
 - a) Add items
 - b) check for item in tuple
 - c) len()
 - d) Access items
2. Write a Python program to perform the following string operation.
 - a) lower()
 - b) upper()
 - c) find()
 - d) replace()
 - e) count()
 - f) len()

3. Write a Python program to perform the operations on sets.
4. Write a Python program to display month, and year by using built in python modules.
5. Write a Python program to print student information using class.
6. Demonstrate a python code to print try, except and finally block statements
7. Write a program in Python to demonstrate following operations:
 - a. Simple inheritance
 - b. Multiple inheritance.
8. Write python program to create GUI using tkinter Module.

Instructions:

1. A certified journal is mandatory for every student to appear for the practical examination.
2. The student has to execute a minimum of eight programs from each part to complete the lab course.

Year	III	Course Code : DSC05-Skill2T	Credits	2
Semester	V	Course Title :	Hours	30
Course Pre-requisites, if any		NA		
Formative Assessment Marks : 10		Summative Assessment Marks : 40	Duration of SEE: 2 hrs.	
Course Objectives				
Unit No.	Course Content			Hours
UNIT I				15
UNIT II				15
Recommended Learning Resources				
Text Books:				
Reference Books:				
1.				

E-Resources:

Year	III	Course Code : SEPBSCCST06		Credits	4
Semester	VI	Course Title : Web Technology		Hours	60
Course Pre-requisites, if any		NA			
Formative Assessment Marks : 20		Summative Assessment Marks : 80	Duration of SEE : 3 hrs.		
Course Objectives	After completing this course satisfactorily, a student will be able to: - Understand basics of web technology. - Recognize the different Client-Side Technologies and tools like HTML, CSS, JavaScript. - Learn Java Servlets and JSP.				
Unit No.	Course Content			Hours	
UNIT-I	Introduction to Internet, WWW, Web Browsers, Web Servers, Web Protocols, Web Design Principles, Structure Tags, HTML text formatting tags: Bold, Underline, Italic, Mark, Subscript, Superscript, Line break, Horizontal rule, Paragraph, .HTML Common tags: Heading, List, Tables, Images, Forms, Frames,.			15	
UNIT-II	CSS: Introduction to CSS, Types of CSS-Inline CSS, Internal CSS, External CSS, CSS Colors, Font, Sizes, Border, Padding, Margin, CSS Selectors and Rules. Introduction to XML: Document type definition, XML Schemas, Document Object model, Presenting XML , Introduction to XHTML, Using XML Processors: DOM and SAX.			15	
UNIT-III	Introduction to JavaScript: Variables, Data type ,Operators, Conditional Statements, Looping Statements, Functions, Numbers, Strings, Arrays, Objects, Exception Handling, Event Handling, Form			10	
UNIT-IV	Introduction to Servlets: Common Gateway Interface (CGI), Lifecycle of a Servlets, deploying a Servlets, The Servlets API, Reading Servlets parameters, Reading initialization parameters, HandlingHttp Request & Responses, Using Cookies and sessions, connecting to a database using JDBC			10	
UNIT-V	Introduction to JSP: The Anatomy of a JSP Page, JSP Processing, Declarations, Directives, Expressions, Code Snippets, implicit objects, Using Beans in JSP Pages, Using Cookies and session, tracking.			10	
Recommended Learning Resources					
Text Books:					
1. Uttam K Roy, “Web Technologies” ,Oxford University Press					
2. Steven Holzner, ”The Complete Reference PHP “, Tata McGraw-Hill.					

Reference Books:

1. Chris Bates, "Web Programming, building internet applications (2nd edition)", Wiley Dremtech
2. Hans Bergsten, "Java Server Pages", SPD O'Reilly
3. D.Flanagan, "Java Script", O'Reilly, SPD.
4. R.W. Sebesta, "Programming world wide web (4th Edition)", Pearson.
5. Dietel and Nieto, "Internet and World Wide Web – How to program", Pearson

E-Resources:

1. Online Learning Platforms

Free

- MDN Web Docs (Mozilla Developer Network)
- Comprehensive resource for HTML, CSS, JavaScript, APIs, and browser technologies.
- W3Schools
- Beginner-friendly tutorials and examples for all major web technologies.
- FreeCodeCamp
- Full interactive curriculum for responsive web design, JavaScript, front-end libraries, and back-end development.
- GeeksforGeeks Web Technology Section
- Tutorials, example programs, and interview questions.

Paid / Freemium

- Coursera (e.g., Web Development Specializations)
- Udemy (Hands-on courses for React, Node.js, JavaScript, etc.)
- Pluralsight (Advanced developer-focused content)

2. Online Documentation & Standards

- W3C (World Wide Web Consortium)
- Official standards for HTML, CSS, Web Accessibility, and Semantic Web.
- WHATWG
- Living standard for HTML and DOM APIs.
- ECMAScript (TC39)
- Official specification for JavaScript.

3. Developer Tools & Sandboxes

- CodePen
- Great for experimenting with HTML/CSS/JS snippets.
- JSFiddle
- Quick prototyping tool for JavaScript.
- StackBlitz
- Online IDE for Angular, React, and full-stack JavaScript

- Replit
- Cloud coding environment supporting multiple languages.

4. E-Books & Online Books

- "Eloquent JavaScript" (free online)
- "You Don't Know JS" series (free on GitHub)
- "HTML & CSS" by Jon Duckett
- "JavaScript: The Good Parts" by Douglas Crockford

5. Open-Source Projects & Libraries

- GitHub (for exploring real-world web projects)
- React, Angular, Vue documentation
- Bootstrap, Tailwind CSS docs

6. Video Learning Resources

- YouTube Channels:
- Traversy Media
- The Net Ninja
- Programming with Mosh
- Web Dev Simplified

7. Research Databases (Academic E-resources)

- IEEE Xplore – Research papers on web technologies, networking, and internet protocols
- ACM Digital Library – Web engineering, HCI, web performance studies
- Google Scholar – Academic papers across all areas of web technology

8. News & Trend Resources

- Smashing Magazine – Web design and development articles
- Dev.to – Community-driven developer posts
- Hacker News – Latest tech and web development trends

Year	III	Course Code : SEPBSCCSP04	Credits	2
Semester	VI	Course Title : Web Technology Lab	Hours	50
Course Pre-requisites, if any		Knowledge of HTM tags, JavaScript		
Formative Assessment Marks : 10		Summative Assessment Marks : 40	Duration of SEE: 3 hrs.	

PART - A:

Develop an HTML document to illustrate six levels of headings.

1. Develop an HTML document showing an unordered list of Union territories with all different types
2. Design web pages for your college containing college name and logo, departments list using list tag.
3. Create a class timetable using table tag.
4. Write a HTML code to design Student Registrations form for your college admission.
5. Design web pages with includes Multi-media data(Image,Audio, Video,Gifs etc)
6. Create a web page using frame.
7. Write code in HTML to develop a web page having two frames that divide the web page into two equal rows and then divide the row into equal columns fill each frame with a different background color.
8. Write CSS code to use inline CSS format your ID Card.
9. Using HTML, CSS create display a text called-Hello India! || on top of an image of India-Map using an overlay.

PART - B:

1. JavaScript program to perform basic arithmetic operations.
2. JavaScript Program to Check if a number is Positive, Negative, or Zero
3. JavaScript Program to Reverse a Sentence.
4. JavaScript program to find factorial of given number.
5. JavaScript program to implement JavaScript object concept.
6. JavaScript program to create Array and inserting data into array
7. JavaScript program to validate an email address.
8. Write a program to creating the Life-Cycle Servlet Application
9. Write a program for printing system date and time using SERVLET.

Instructions:

1. A certified journal is mandatory for every student to appear for the practical examination.
2. The student has to execute a minimum of eight programs from each part to complete the lab course.

Year	III	Course Code : SKILL-3MP	Credits	2
Semester	VI	Course Title : Internship/Field Visit	Hours	30
Course Pre-requisites, if any		NA		
Formative Assessment Marks : 10		Summative Assessment Marks : 40	Duration of SEE: 2 hrs.	
Course Objectives		After completing this course satisfactorily, a student will be able to:		
		• The student will be able to analyze, specify, design, implement and test application software. • Allows a student to demonstrate their capabilities while working independently. • Design a project through technical knowledge to meet customer/end user needs. • Acquire a deeper understanding of software industry trends, best practices, and current • Developments. Apply process of Project Development to analyze and design the real-world problem. • Document the project report of various phases for future scope of the project development.		

Semester End Exam (SEE) Question Paper Pattern

Duration of the examination: 3 hours

Max. Marks: 80

Section A

Answer any TEN Questions from the following, each carries 2 marks:

[10X2=20]

1. -----
2. -----
3. -----
4. -----
5. -----
6. -----
7. -----
8. -----
9. -----
10. -----
11. -----
12. -----

Note: (Select three questions from Unit I and II. Select two questions each from III, IV and V Units)

Section B

Answer any FOUR from the following questions each carries 5 marks.

[4X5=20]

13. -----
14. -----
15. -----
16. -----
17. -----

Note: (Select one question each from Units I, II, III, IV and V)

Section C

Answer any FOUR from the following questions each carries 10 marks.

[4X10=40]

(The Question consist two sub-questions)

18. -----
19. -----
20. -----
21. -----
22. -----

Note: Select one question each from Units I, II, III, IV, and V.

CIA (Continues Internal Assessment) for Practical	
Assessment Type	Marks
Test 1 on PART A	10
Test 2 on PART B	10
Maximum Marks to be awarded	10

Instructions:

1. A Certified Journal is mandatory for appearing the examination.
2. Students shall be given two programming assignments taking into consideration of duration of the time allotted to students for writing, typing and executing the programs.
3. Award maximum 10 marks based on the average of two practical CIA.

Note: Guidelines given by the university from time-to-time shall be followed for IA.

Semester End Examination (SEE) Scheme of Evaluation for Lab Examination

Assessment Criteria	Marks
Writing of 2 Programs (Each from Part A & Part B)	15
Execution (Includes program code modification and execution result)	15
Journal	05
Viva-Voice	05
Total	40 Marks

Instructions:

CIA (Continues Internal Assessment) for Theory	
Assessment Type	Marks
1. Test 1	15
2. Assignment	05
1. Test 2	15
2. Seminar	05
Maximum Marks to be awarded	20

1. Award maximum 20 marks based on the average of two theories CIA.

Theory Examination Question Paper Pattern for Elective/Skill Papers of B. Sc. / BCA**Time: 2 Hours****Max Marks: 40**

Instructions to Candidates:

1. All Sections are Compulsory.
2. Draw neat and labeled diagrams wherever necessary.

Section-A		
Answer ALL the following Questions.		5x2=10
Q1	a	Question to be asked from Unit-I
	b	Question to be asked from Unit-I
	c	Question to be asked from Unit-I
	d	Question to be asked from Unit-II
	e	Question to be asked from Unit-II
Section-B		
Answer any SIX of the following Questions.		6x5=30
Q2	Question to be asked from Unit-I	
Q3	Question to be asked from Unit-I	
Q4	Question to be asked from Unit-I	
Q5	Question to be asked from Unit-I	
Q6	Question to be asked from Unit-II	
Q7	Question to be asked from Unit-II	
Q8	Question to be asked from Unit-II	
Q9	Question to be asked from Unit-II	

Instructions:

CIA(Continuous Internal Assessment) for Theory	
Assessment Type	Marks
1.Test 1	10
2.Test 2	10
Maximum Marks to be awarded	10

Award maximum 10 marks based on the average of two theories CIA.