

**BHARATHIAR UNIVERSITY: COIMBATORE-641 046**

**B.Sc. CS/IT/CT/SS/MMWT/CSA & BCA Degree Courses**

(For the students admitted from the academic year **2019-2020** and onwards)

**SCHEME OF EXAMINATION - CBCS PATTERN**

Part	Study components	Course Title	Ins. Hrs/week	Examinations			Credit	
				Dur. Hrs.	CIA	Ext.Marks		Total Marks
<b>Semester I</b>								
I	Language – I		6	3	25	75	100	4
II	English – I		6	3	25	75	100	4
III	Core 1: Computing Fundamentals and C Programming		4	3	25	75	100	4
III	Core 2: Digital Fundamentals and Computer Architecture		4	3	25	75	100	4
III	Core Lab 1: Programming Lab – C		3	3	40	60	100	4
III	Allied 1: &&		5	3	25	75	100	4
IV	Environmental Studies #		2	3	-	50	50	2
<b>Semester II</b>								
I	Language – II		6	3	25	75	100	4
II	English – II		6	3	25	75	100	4
III	Core 3: C++ Programming		5	3	25	75	100	4
III	Core Lab 2: Programming Lab – C++		4	3	40	60	100	4
III	Core Lab 3: Internet Basics		2	3	20	30	50	2
III	Allied 2: &&		5	3	25	75	100	4
IV	Value Education – Human Rights #		2	3	-	50	50	2
<b>Semester III</b>								
III	Core 4: Data Structures		6	3	25	75	100	4
III	Core 5: Java Programming		6	3	25	75	100	4
III	Core Lab 4: Programming Lab – Java		5	3	40	60	100	4
III	Allied 3: &&		6	3	25	75	100	4
IV	Skill based Subject 1 - &&		5	3	20	55	75	3
IV	Tamil @/ Advanced Tamil (OR) Non-major elective-1 (Yoga for Human Excellence)# / Women’s Rights#		2	3	-	50	50	2
<b>Semester IV</b>								
III	Core 6: System Software and Operating System		6	3	25	75	100	4
III	Core 7: Linux and Shell Programming		6	3	25	75	100	4
III	Core Lab 5: Linux and Shell Programming Lab		6	3	40	60	100	4
III	Allied 4: &&		6	3	25	75	100	4

IV	Skill based subject 2 (lab) &&	4	3	30	45	75	3
IV	Tamil @/ Advanced Tamil (OR) Non-major elective-II (General Awareness) #	2	3	-	50	50	2
	<b>Semester V</b>						
III	Core 8: RDBMS & Oracle	6	3	25	75	100	4
III	Core 9: Visual Basic	6	3	25	75	100	4
III	Core Lab 6: Programming Lab – VB & Oracle	6	3	40	60	100	4
III	Elective 1 &&	6	3	25	75	100	4
IV	Skill based Subject 3: &&	6	3	20	55	75	3
	<b>Semester VI</b>						
III	Core 10: Graphics & Multimedia	5	3	25	75	100	4
III	Core 11: Project Work Lab %%	5	3	-	200	200	8
III	Core Lab 7: Programming Lab – Graphics & Multimedia	6	3	40	60	100	4
III	Elective II &&	5	3	25	75	100	4
III	Elective III &&	5	3	25	75	100	4
IV	Skill based Subject 4 (lab) &&	4	3	30	45	75	3
V	Extension Activities	-	-	50	-	50	2
	Total					3500	140

@ No University Examinations. Only Continuous Internal Assessment (CIA)

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%% see Guidelines for Project Work.

**NOTE:** The syllabus for the following papers furnished below to be followed for the candidates admitted from the Academic Year 2019-2020 onwards and there is no change in the syllabi of the remaining papers

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**SCHEME OF EXAMINATION - CBCS PATTERN**  
**List of Allied, Elective and Skill Based Subjects**

Course Subject	<b>B.Sc. COMPUTER SCIENCE</b>
Allied-1	Mathematical Structures for Computer Science
Allied-2	Discrete Mathematics
Allied-3	Computer Based Optimization Techniques
Allied-4	Business Accounting
Elective- I	<b>PYTHON Programming</b> / Computer Networks / Organizational Behavior
Elective- II	Network Security and Cryptography/ Artificial Intelligence and Expert Systems / Web Technology
Elective- III	Data Mining/ Open source software/ <b>Internet of Things (IoT)</b>
Skill-1	Software Engineering and Software Project Management
Skill-2 (lab)	Software Project Management- Lab
Skill-3	Software Testing
Skill-4 (lab)	Software Testing Lab

Course Subject	<b>B.Sc. INFORMATION TECHNOLOGY</b>
Allied-1	Mathematical Structures for Computer Science
Allied-2	Discrete Mathematics
Allied-3	Microprocessor & ALP
Allied-4	Mastering LAN and Trouble Shooting
Elective- I	Soft Computing / Animation Techniques / Business Intelligence
Elective- II	Network Security and Administration/ Mobile Computing / <b>PYTHON Programming</b>
Elective- III	<b>Internet of Things (IoT)</b> / Component Technology / E-Commerce
Skill-1	Introduction to web design & Applications
Skill-2 (lab)	HTML, XML and JavaScript Lab
Skill-3	Dot Net Programming
Skill-4 (lab)	Dot Net Lab

Course Subject	<b>B.Sc. COMPUTER TECHNOLOGY</b>
Allied-1	Mathematical Structures for Computer Science
Allied-2	Discrete Mathematics
Allied-3	E-Commerce
Allied-4	Business Accounting
Elective- I	Mobile Computing / Distributed Computing / <b>PYTHON Programming</b>

Elective- II	Middleware Technologies / Animation Techniques / Computer Installation & Servicing
Elective- III	Data Mining / Embedded Systems / <b>Internet of Things (IoT)</b>
Skill-1	Data Communication & Networks
Skill-2 (lab)	Network Lab
Skill-3	Network Security & Management
Skill-4 (lab)	Network Security Lab

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Course	<b>B.Sc. SOFTWARE SYSTEMS</b>
Subject	
Allied-1	Mathematical Structures for Computer Science
Allied-2	Discrete Mathematics
Allied-3	Computer Based Optimization Techniques
Allied-4	Business Accounting
Elective- I	E-Commerce / Design and analysis of Algorithms / Web Technology
Elective- II	Computer Networks / Software Quality Assurance / Management Information Systems
Elective- III	Wireless Mobile Communications / Component Technologies / Mastering LAN & Troubleshooting
Skill-1	WAP & XML
Skill-2 (lab)	XML Lab
Skill-3	ASP .NET
Skill-4 (lab)	ASP .NET Lab

Course	<b>B.Sc. MULTIMEDIA &amp; WEB TECHNOLOGY</b>
Subject	
Allied-1	Mathematical Structures for Computer Science
Allied-2	Discrete Mathematics
Allied-3	Microprocessor & ALP
Allied-4	Mastering LAN & Trouble Shooting
Elective- I	Web Technology / Software Engineering / CASE Tools Concepts and applications
Elective- II	Flash / Distributed Computing / Multimedia Systems
Elective- III	3DS MAX Animation / Software Project Management / Organizational Behaviour
Skill-1	Introduction to PHP Programming
Skill-2 (lab)	PHP Programming Lab
Skill-3	Animation Techniques
Skill-4 (lab)	Animation Lab - Flash

Course	<b>B.Sc. COMPUTER SCIENCE &amp; APPLICATIONS</b>
Subject	
Allied-1	Mathematical Structures for Computer Science
Allied-2	Discrete Mathematics
Allied-3	Management Information Systems
Allied-4	Organizational Behaviour
Elective- I	Client/Server Computing / E-Commerce / Software Engineering
Elective- II	Network Security & Cryptography / Distributed Computing / Computer Networks

Elective- III	Mobile Computing / Web Technology / Software Testing
Skill-1	Internet Programming
Skill-2 (lab)	PHP Programming Lab
Skill-3	Web designing with ASP and ASP .NET
Skill-4 (lab)	ASP Lab

Course	<b>BCA</b>
Subject	
Allied-1	Mathematical Structures for Computer Science
Allied-2	Discrete Mathematics
Allied-3	Computer Based Optimization Techniques
Allied-4	Business Accounting
Elective- I	Introduction to Compiler Design / PHP & Scripting Language / <b>PYTHON Programming</b>
Elective- II	Computer Networks / Dot Net programming / Distributed Computing
Elective- III	<b>Internet of Things (IoT)</b> / Web Services / Software Testing
Skill-1	Web Programming
Skill-2 (lab)	Web Programming Lab
Skill-3	CASE Tools Concepts and Applications
Skill-4 (lab)	CASE Tools Lab

## **Internet of Things**

**UNIT I:** Introduction - Definition & characteristics of IoT - physical design of IoT - logical design of IoT - IoT enabling Technologies - IoT levels & Deployment templates. Domain specific Iots : Home Automation - cities - Environment - Energy - retail - logistics - Agriculture - Industry i Health and life style.

**UNIT II:** IoT and M2M - Deference between Iot and M2M - SDN and NFV for lot - IoT systems management - SNMP - YANG - NETOPEER

**UNIT III:** IoT platforms design Methodology - purpose and specification - process specification - Domain model specification - Information model specification - Service specification - IoT level specification - functional view specification - operational view specification - Device and component Integrators - Application Development.

**UNIT IV:** Logical design using python - Installing python - type conversions - control flow - functions - modules - File handling - classes. IoT physical devices and End points, building blocks of IoT device - Raspberry Pi - Linux on Raspberry Pi - Raspberry Pi interfaces.

**UNIT V:** IoT physical servers & cloud computing - WAMP - Xively cloud for IoT - python Web application frame work - Amazon web services for IoT.

**Text Book** : Internet of Things - A hands on Approach

**Authors** : Arshdeep Bahga, Vijay Madisetti

**Publisher** : Universities press.

**Reference Book** : Internet of Things - Srinivasa K.G., Siddesh G.M.  
Hanumantha Raju R.

**Publisher** : Cengage Learning India pvt. Ltd (2018)



### PYTHON PROGRAMMING

Units	Contents	Hrs
<b>Unit I</b>	<b>BASICS</b> : Python - Variables - Executing Python from the Command Line - Editing Python Files - Python Reserved Words - Basic Syntax-Comments - Standard Data Types – Relational Operators - Logical Operators - Bit Wise Operators - Simple Input and Output.	10
<b>Unit II</b>	<b>CONTROL STATEMENTS:</b> Control Flow and Syntax - Indenting - if Statement - statements and expressions- string operations- Boolean Expressions -while Loop - break and continue - for Loop. <b>LISTS:</b> List-list slices - list methods - list loop – mutability – aliasing - cloning lists - list parameters. <b>TUPLES:</b> Tuple assignment, tuple as return value -Sets – Dictionaries.	11
<b>Unit III</b>	<b>FUNCTIONS:</b> Definition - Passing parameters to a Function - Built-in functions- Variable Number of Arguments - Scope – Type conversion-Type coercion-Passing Functions to a Function - Mapping Functions in a Dictionary – Lambda - Modules - Standard Modules – sys – math – time - dir - help Function.	10
<b>Unit IV</b>	<b>ERROR HANDLING:</b> Run Time Errors - Exception Model - Exception Hierarchy - Handling Multiple Exceptions - Data Streams - Access Modes Writing - Data to a File Reading - Data From a File - Additional File Methods - Using Pipes as Data Streams - Handling IO Exceptions - Working with Directories.	11
<b>Unit V</b>	<b>OBJECT ORIENTED FEATURES:</b> Classes Principles of Object Orientation - Creating Classes - Instance Methods - File Organization - Special Methods - Class Variables – Inheritance – Polymorphism - Type Identification - Simple Character Matches - Special Characters - Character Classes – Quantifiers - Dot Character - Greedy Matches – Grouping - Matching at Beginning or End - Match Objects – Substituting - Splitting a String - Compiling Regular Expressions.	10
	<b>Total Contact Hrs</b>	<b>52</b>
<b>TEXT BOOKS</b>	1. Mark Summerfield. —Programming in Python 3: A Complete introduction to the PythonLanguage, Addison-Wesley Professional, 2009. 2. Martin C. Brown, —PYTHON: The Complete Reference  , McGraw-Hill, 2001.	
<b>REFERENCES</b>	1. Allen B. Downey, ``Think Python: How to Think Like a Computer Scientist``, 2nd edition, Updated for Python 3, Shroff/O'Reilly Publishers, 2016 2. Guido van Rossum and Fred L. Drake Jr, —An Introduction to Python – Revised and updated for Python 3.2, Network Theory Ltd., 2011. 3. Wesley J Chun, —Core Python Applications Programming  , Prentice Hall, 2012.	

## PYTHON PROGRAM LIST

1. Write a python program that displays the following information: Your name, Full address Mobile number, College name, Course subjects.
2. Write a python program to find the largest three integers using if-else and conditional operator.
3. Write a python program that asks the user to enter a series of positive numbers (The user should enter a negative number to signal the end of the series) and the program should display the numbers in order and their sum.
4. Write a python program to find the product of two matrices [A]m $\times$ p and [B]p $\times$ r
5. Write recursive functions for GCD of two integers.
6. Write recursive functions for the factorial of positive integer
7. Write recursive functions for Fibonacci Sequence up to given number n.
8. Write recursive functions to display prime number from 2 to n.
9. Write a python program that writes a series of random numbers to a file from 1 to n and display.
10. Write a python program to sort a given sequence: String, List and Tuple.
11. Write a python program to make a simple calculator.
12. Write a python program for Linear Search.
13. Write a python program for Binary Search.
14. Write a python program to implement merge sort.
15. Write a python program to find the sum of array of numbers.
16. Write a python program to find the distance between two points.
17. Write a python program for Inheritance.
18. Write a python program to slice a given list.
19. Write a python program to count the number of words.
20. Write a python program to copy a file.
21. Write a python program to check the given password is correct or not.