DON BOSCO ARTS & SCIENCE COLLEGE
ANGADIKADAVU
(Affiliated to Kannur University Approved by Government of Kerala)
ANGADIKADAVU P.O., IRITTY, KANNUR – 670706

COURSE PLAN

BCA

(2020 – 23)

SEMESTER - V

ACADEMIC YEAR - (2022-23)

V Semester BCA (2020 - 23)			
SL. No.	Name of Subjects with Code	Name of the Teacher	Duty Hours per week
1.	5B08BCA Operating System	Sindhu PM	3
2.	5B13BCA Enterprise Java Programming	Fincy Cyriac	4
3.	5B14BCA- Python Programming	Vineetha Mathew	3
4.	5B 16 BCA - E01 Information Security	Sruthi N	4
5.	5B15BCAWeb Technology	Hebin Layola	2
6.	6B21BCA Lab V: Enterprise Java Programming	Fincy Cyriac	3
7.	6B22BCA Lab VI: Python Programming	Vineetha Mathew	4
8.	6B23BCA Lab VII: Web Technology	Hebin Layola	2
9	General Elective Course	Sruthi N	2
	Name of Class Incharge	Hebin Layola	

TIME TABLE

Day	09.50 Am - 10.45 Am	10.45 Am -11.40 Am	11.55 Am -12.50 Pm	01.40 Pm - 02.35 Pm	02.35 Pm - 03.30 Pm
1	5B14BCA- Python Programming	5B13BCA Enterprise Java Programming	5B15BCAWeb Technology	5B08BCA Operating System	5B 16 BCA - E01 Information Security
2	5B15BCAWeb Technology	General Elective Course	5B13BCA Enterprise Java Programming	5B 16 BCA - E01 Information Security	5B13BCA Enterprise Java Programming
3	5B08BCA Operating System	General Elective Course	5B13BCA Enterprise Java Programming	6B22BCA Lab VI: Python Programming	5B 16 BCA - E01 Information Security
4	5B14BCA- Python Programming	5B13BCA Enterprise Java Programming	5B 16 BCA - E01 Information Security	5B15BCAWeb Technology	5B08BCA Operating System
5	5B13BCA Enterprise Java Programming	6B22BCA Lab VI: Python Programming	5B13BCA EnterpriseJava Programming	5B 16 BCA - E01 Information Security	5B15BCAWeb Technology

Subject Code:	**5B15BCA**
Subject Name:	**Web Technology**
No. of Credits:	**2**
No. of Contact Hours:	**36**
Hours per Week:	**2Hour Theory**
Name of the Teacher:	**Sruthi N**

COURSE OUTCOME

CO1: Enable students to program for the World Wide Web using HTML, JavaScript.
CO2: Create static and dynamic web pages.
CO3: Impart basic knowledge in Client-server model.

UNIT I

Introduction to Internet and WWW, Introduction to HTML, structure of HTML, HTML elements, attributes, syntax of tags , starting and ending tags, physical style tags,listing, labeling, grouping, images and linking **(6 Hrs)**

UNIT II

HTML Tables-tags-<tr>,<td>,<th> attributes. HTML Form-tag, attributes-typepasswd, submit, radio, check, method, action. **(8Hrs)**

UNIT III

Frames-<frame>, <frameset>, <iframe>,<noframe> and other important tags and attributes. Simple programs using frames. **(6 Hrs)**

UNIT IV

Javascript- Introduction, data types, variables, operators, functions, objects, arrays. Client-side object hierarchy and document object Model, <script>, event handlers, javascript in urls **(8Hrs)**

UNIT V

Windows and frames-dialog boxes, status line, navigator object, opening Windows, closing windows, Location object, history object.- Date object- math object-Accessing form object **(8Hrs)**

Books for Study:

1. Bill Kennedy, Chuck Musciano, HTML: The Definitive Guide, 3rd Ed, O'Reilly Media
2. Flanagan David, JavaScript: The Definitive Guide, 6th Ed, O'Reilly Media

Books for Reference:

1. Thomas A. Powel, HTML & CSS: The Complete Reference, 5th Ed, TMH

TEACHING SCHEDULE

No of Weeks	Dates	Session	Topic
1	06-06-2022 To 10-06-2022	1	Introduction to Internet and WWW
		2	Introduction to Internet and WWW
2	13-06-2022 To 17-06-2022	3	Search engine,Web browser
		4	Introduction to HTML
3	20-06-2022 To 24-06-2022	5	Introduction to HTML
		6	Structure of HTML
4	27-06-2022 To 01-07-2022	7	Structure of HTML
		8	HTML elements, attributes
5	04-07-2022 To 08-07-2022	9	HTML elements, attributes
		10	Syntax of tags , starting and ending tags
6	11-07-2022 To 15-07-2022	11	**I Internal Examination**
		12	**I Internal Examination**
			I Internal Examination
			I Internal Examination
			I Internal Examination
7	18-07-2022 To 22-07-2022	13	Physical style tags
		14	Listing, labeling,
8	25-07-2022 To 29-07-2022	15	Grouping, images and linking
		19	Class test Module 1
		28 July	Karkidaka Vav
9	01-08-2022 To 05-08-2022	26	HTML Tables-tags-<tr>,<td>,<th> attributes
		17	HTML Form-tag,Form tag attributes-typepasswd, submit
10	08-08-2022 To 12-08-2022	08 August	Muharam
		18	Radio, check, method, action
11	15-08-2022 To 19-08-2022	15 August	Independance Day
		19	Class test Module 2
		18 August	Sree Krishna Jayanthi
		20	Frames-<frame>, <frameset>, <iframe>,<noframe>

12	22-08-2022 To 26-08-2022	21	Simple programs using frames.
		22	Javascript- Introduction, data types, variables, operators, functions, objects
13	29-08-2022 To 02-09-2022	23	Arrays. Client-side object hierarchy and document object Model, <script>, event handlers, javascript in urls
		24	Windows and frames-dialog boxes, status line, navigator object
14	05-06-2022 To 09-09-2022	05 September	ONAM VACATION
		06 September	ONAM VACATION
		07 September	ONAM VACATION
		08 September	ONAM VACATION
		09 September	ONAM VACATION
15	12-09-2022 To 16-09-2022	25	Opening Windows, closing windows
		26	Location object, history object.
16	19-09-2022 To 23-09-2022	27	Date object- math object-Accessing form object
		21September	Sree Narayana Guru Samadhi
		28	Revision & Class Test
17	26-09-2022 To 30-09-2022	29	**II Internal Examination**
		30	**II Internal Examination**
			II Internal Examination
			II Internal Examination
			II Internal Examination
			II Internal Examination
18	03-10-2022 To 07-10-2022	31	STUDY LEAVE
		04 October	Maha Navami
		05 October	Vijaya Dashami
		32	STUDY LEAVE
19	10-10-2022 To 14-10-2022	33	STUDY LEAVE
		34	STUDY LEAVE
			V Semester University Examination
			V Semester University Examination
20	17-10-2022 To 21-10-2022	35	**V Semester University Examination**
		36	**V Semester University Examination**

Subject Code:	**6B23BCA**
Subject Name:	**Lab VII: Web Technology**
No. of Credits:	**2**
No. of Contact Hours:	**36**
Hours per Week:	**2 Hour Lab**
Name of the Teacher:	**Hebin Layola**

Sample Program list

1. Develop an HTML page using all basic tags
2. Develop an HTML page to display hotel menu using all types of lists
3. Write an HTML code to insert an image into the web page. Use the attributes height, width and border. Also align some text with respect to the images. The image should have an ALT text in it.
4. Design a HTML page for the following.
a. Set an image as a link
b. Open a link in a new browser window
c. Jump to another part of a document (on same page)
5. Create a web page to display the maximum and minimum temperature of 5 cities using table.
6. Create a web page for your college using frames, images and hyperlink
7. Create a web page that illustrate the onMouseOver and onMouseOut event handlers.
8.Form Validation using Javascript.
9. Create an email registration form. Give necessary validations
10. Write a JavaScript code using arrays
11. Develop an HTML page that accepts any mathematical expression, evaluates that expression and display the result of the evaluation
12. Write a Javascript program to display the current time
13. Write a Javascript program to print the prime numbers within a range
14. Write a Javascript program to show the working of alert ()
15. Write a JavaScript program to find the factorial of a number.
16. Form Processing using PHP
17. Form validation using PHP
18. Storing data in MYSQL using PHP

TEACHING SCHEDULE

No of Weeks	Dates	Session	Topic
1	06-06-2022 To 10-06-2022	1	Sample program
		2	Sample program
2	13-06-2022 To 17-06-2022	3	Sample program
		4	Sample program
3	20-06-2022 To 24-06-2022	5	Develop an HTML page using all basic tags
		6	Develop an HTML page to display hotel menu using all types of lists
4	27-06-2022 To 01-07-2022	7	Sample program
		8	Sample program
5	04-07-2022 To 08-07-2022	9	Write an HTML code to insert an image into the web page. Use the attributes height, width and border. Also align some text with respect to the images. The image should have an ALT text in it.
		10	Design a HTML page for the following. a. Set an image as a link b. Open a link in a new browser window c. Jump to another part of a document (on same page)
6	11-07-2022 To 15-07-2022	11	**I Internal Examination**
		12	**I Internal Examination**
			I Internal Examination
			I Internal Examination
			I Internal Examination
7	18-07-2022 To 22-07-2022	13	Create a web page to display the maximum and minimum temperature of 5 cities using table.
		14	Create a web page for your college using frames, images and hyperlink
8	25-07-2022 To 29-07-2022	15	Create a web page for your college using frames, images and hyperlink
		16	Sample program
		28 July	Karkidaka Vav
9	01-08-2022 To 05-08-2022	17	Form Validation using Javascript.
		18	Create an email registration form. Give necessary validations
10	08-08-2022 To 12-08-2022	08 August	Muharam
		19	Write a JavaScript code using arrays
11	15-08-2022	15 August	Independance Day

	To 19-08-2022	20	Write a JavaScript program to find the factorial of a number.
		18 August	Sree Krishna Jayanthi
		21	Develop an HTML page that accepts any mathematical expression, evaluates that expression and display the result of the evaluation
12	22-08-2022 To 26-08-2022	22	Write a Javascript program to display the current time
		23	Write a Javascript program to print the prime numbers within a range
13	29-08-2022 To 02-09-2022	24	Write a Javascript program to show the working of alert ()
		25	Write a Javascript program to show the working of alert ()
14	05-06-2022 To 09-09-2022	05 September	ONAM VACATION
		06 September	ONAM VACATION
		07 September	ONAM VACATION
		08 September	ONAM VACATION
		09 September	ONAM VACATION
15	12-09-2022 To 16-09-2022	26	Write a JavaScript program to find the factorial of a number.
		27	Form Processing using PHP
16	19-09-2022 To 23-09-2022	28	Form validation using PHP
		21September	Sree Narayana Guru Samadhi
		29	Storing data in MYSQL using PHP
17	26-09-2022 To 30-09-2022	30	**II Internal Examination**
		31	**II Internal Examination**
			II Internal Examination
			II Internal Examination
			II Internal Examination
			II Internal Examination
18	03-10-2022 To 07-10-2022	32	Study Leave
		04 October	Maha Navami
		05 October	Vijaya Dashami
		33	Study Leave
19	10-10-2022 To 14-10-2022	34	Study Leave
			V Semester University Examination
			V Semester University Examination
20	17-10-2022 To 21-10-2022	35	**V Semester University Examination**
		36	**V Semester University Examination**

Subject Code:	**5B13BCA**
Subject Name:	**ENTERPRISE JAVA PROGRAMMING**
No. of Credits:	**4**
No. of Contact Hours:	**72**
Hours per Week:	**4**
Name of the Teacher:	**FINCY CYRIAC**

COURSE OUTCOME

CO1: Understand the Enterprise Java platform

CO2: Learn APIs and runtime environment for developing and running large scale Projects.

CO3: Develops programming skills in multi – tiered, scalable, reliable and secure Network application.

CO4: Understand the structure of a web application.

Unit I

Java Database Connectivity: JDBC architecture; Drivers, JDBC-ODBC bridge, native API partly java driver, Net Protocol all Java driver, Native protocol all Java driver; Connecting to Database; statements; Large data types; Dates and Times; Handling Errors; SQL warning; Metadata, database meta data, result set meta data

(15 Hrs)

Unit II

Remote Method Invocation: RMI architecture; RMI Object services; Naming/registry service, object activation service, distributed garbage collection; Defining Remote objects; Key RMI classes for remote object implementations; Stubs and skeletons; Accessing remote object as a client; Remote method arguments and return values; Dynamically loaded classes; Configuring clients and servers for remote class loading;

(15 Hrs)

Unit III

Java Servlets: Life cycle; HTTP Servlets, forms **and** interaction; **POST,** HEAD and other requests; Servlet requests; Servlet responses; Error handling, status codes; Custom Servlet Initialization; Thread safety; Cookies; Session tracking

(15 Hrs)

Unit IV

Common Object Request Broker Architecture: Introduction to CORBA, CORBAarchitecture, CORBA versus Java RMI, IDL Compiler, Interface definition language, IDL stub, IDL Skelton interface, Object Request Broker; Naming service; Inter-ORB communication.

(12 Hrs)

Unit V

Creating CORBA objects; Creating IDL modules, interfaces, data members and methods; IDL and Java; Simple server class, helper class, holder class, client stubs and server skeltons; Writing the implementation class; Initializing ORB, Registering with a naming service; Adding objects to a naming context; Finding remote objects; Initial ORB references; Getting objects from other Remote objects.

(15 Hrs)

Books for Study:

1. Java Enterprise in a Nutshell by David Flanagan and Jim Parley, O'Reilly Associates Inc.

Books for Reference:

1. David Flanagan, Jim Farley and and William Crawford, Java Enterprise in a Nutshell, 2nd Edition, O'Reilly Media
2. Jim Keogh, J2EE: The Complete Reference, 1st Ed, TMH
3. C. NellaiKannan, Java & J2EE, Nels Publication
4. Thomas J. Mowbray and William A. Ruh, Inside CORBA: Distributed Object Standards and Applications, Addison Wesley

TEACHING SCHEDULE

No of Weeks	Dates	Session	Topic
1	06-06-2022 To 10-06-2022	1	Java Database Connectivity
		2	JDBC architecture
		3	Drivers- JDBC-ODBC bridge, native API partly java driver
		4	Drivers -Net Protocol all Java driver, Native protocol all Java driver
2	13-06-2022 To 17-06-2022	5	Connecting to Database
		6	Statements
		7	Large data types, Dates and Times
		8	Handling Errors, SQL warning
3	20-06-2022 To 24-06-2022	9	Metadata- Database meta data, Result set meta data
		10	Module 1 class test
		11	Remote Method Invocation
		12	RMI architecture
4	27-06-2022 To 01-07-2022	13	RMI Object services- Naming/registry service,
		14	object activation service, distributed garbage collection
		15	Defining Remote objects
		16	Key RMI classes for remote object implementations
5	04-07-2022 To 08-07-2022	17	Stubs and skeletons;
		18	Accessing remote object as a client
		19	Remote method arguments and return values
		20	Dynamically loaded classes
6	11-07-2022	21	**I Internal Examination**
		22	**I Internal Examination**

No of Weeks	Dates	Session	Topic
	To 15-07-2022	23	**I Internal Examination**
		24	**I Internal Examination**
		25	**I Internal Examination**
7	18-07-2022 To 22-07-2022	26	Configuring clients and servers for remote class loading
		27	Module 2 class test
		28	Java Servlets
		29	Life cycle
8	25-07-2022 To 29-07-2022	30	HTTP Servlets
		31	forms **and** interaction
		32	**POST,** HEAD and other requests
		28 July	Karkidaka Vav
9	01-08-2022 To 05-08-2022	33	Servlet requests
		34	Servlet responses
		35	Error handling, status codes
		36	Custom Servlet Initialization
10	08-08-2022 To 12-08-2022	08 August	Muharam
		37	Thread safety
		38	Cookies
		39	Session tracking
		40	Module 3 class test
11	15-08-2022 To 19-08-2022	15 August	Independance Day
		41	Common Object Request Broker Architecture:- Introduction to CORBA
		18 August	Sree Krishna Jayanthi
		42	CORBA architecture
		43	CORBA versus Java RMI
		44	IDL Compiler, Interface definition language
12	22-08-2022 To 26-08-2022	45	IDL stub, IDL Skelton interface
		46	Object Request Broker
		47	Naming service
		48	Inter-ORB communication
13	29-08-2022 To 02-09-2022	49	Module 4 class test
		50	Creating CORBA objects
		51	Creating IDL modules, interfaces
		52	Data members and methods
14	05-06-2022 To	05 September	ONAM VACATION
		06 September	ONAM VACATION
		07 September	ONAM VACATION

No of Weeks	Dates	Session	Topic
	09-09-2022	08 September	ONAM VACATION
		09 September	ONAM VACATION
15	12-09-2022 To 16-09-2022	53	IDL and Java; Simple server class
		54	Helper class, holder class, client stubs and server skeltons
		55	Writing the implementation class
16	19-09-2022 To 23-09-2022	56	Initializing ORB
		57	Registering with a naming service
		21September	Sree Narayana Guru Samadhi
		58	Adding objects to a naming context
17	26-09-2022 To 30-09-2022	59	**II Internal Examination**
		60	**II Internal Examination**
		61	**II Internal Examination**
		62	**II Internal Examination**
		63	**II Internal Examination**
		64	**II Internal Examination**
18	03-10-2022 To 07-10-2022	65	Finding remote objects
		04 October	Maha Navami
		05 October	Vijaya Dashami
		66	Initial ORB references;
		67	Getting objects from other Remote objects.
19	**10-10-2022 To 14-10-2022**	68	Module 5 class test
		69	**V Semester University Examination**
		70	**V Semester University Examination**
20	17-10-2022 To 21-10-2022	71	**V Semester University Examination**
		72	**V Semester University Examination**

Subject Code:	**6B21BCA LAB V:**
Subject Name:	**ENTERPRISE JAVA PROGRAMMING**
No. of Credits:	**2**
No. of Contact Hours:	**54**
Hours per Week:	**3**
Name of the Teacher:	**FINCY CYRIAC**

COURSE OUTCOME

CO1: Can write and execute simple JDBC Programs.
CO2: Can write and execute simple RMI Programs.
CO3: Can Write and execute simple servlet programs.
CO4: Can write and execute simple CORBA programs.

Sample Program List

A list of 10 Programs are given below. Each student has to complete and record all the exercises. A detailed problem statement shall be prepared by the faculty concerned.

1. JDBC program to insert, Delete and Update records into Employee table.
2. JDBC program to connect to Student table. Implement the record scrolling functions – first(), last(), next(), previous(), beforeFirst(), afterLast(), absolute() and relative().
3. JDBC program to display database metadata.
4. JDBC program to display Resultset metadata.
5. RMI program for Complex number operation.
6. RMI program for Bank operation.
7. Create an HTML form to read student details such as Roll, name,age, sex, qualification, percentage of marks etc. Write a servlet program that displays the same details.
8. Create an HTML form that reads a file name from the user. Write a servlet program that displays the contents of the file, specified by the user.
9. Session handling servlet that displays total number of visits to that page.
10. CORBA program for arithmetic operation

TEACHING SCHEDULE

No of Weeks	Dates	Session	Topic
1	06-06-2022 To 10-06-2022	1	Sample program -JDBC
		2	**Sample program -JDBC**
		3	JDBC program to insert, Delete and Update records into Employee table
2	13-06-2022 To 17-06-2022	4	JDBC program to insert, Delete and Update records into Employee table
		5	JDBC program to connect to Student table. Implement the record scrolling functions – first(), last(), next(), previous(), beforeFirst(), afterLast(), absolute() and relative().
		6	JDBC program to connect to Student table. Implement the record scrolling functions – first(), last(), next(), previous(), beforeFirst(), afterLast(), absolute() and relative().
3	20-06-2022 To 24-06-2022	7	JDBC program to display database metadata
		8	JDBC program to display Resultset metadata
		9	Sample program -RMI
4	27-06-2022 To 01-07-2022	10	Sample program -RMI
		11	Sample program -RMI
		12	Sample program -RMI
5	04-07-2022 To 08-07-2022	13	RMI program for Complex number operation
		14	RMI program for Complex number operation
		15	RMI program for Bank operation
6	11-07-2022 To 15-07-2022	16	**I Internal Examination**
		17	**I Internal Examination**
		18	**I Internal Examination**
		19	**I Internal Examination**
		20	**I Internal Examination**
7	18-07-2022 To 22-07-2022	21	RMI program for Bank operation
		22	RMI program for Bank operation
8	25-07-2022 To 29-07-2022	23	Sample program- servlet
		28 July	Karkidaka Vav

No of Weeks	Dates	Session	Topic
9	01-08-2022 To 05-08-2022	24	Sample program- servlet
		25	Sample program- servlet
10	08-08-2022 To 12-08-2022	08 August	Muharam
		26	Create an HTML form to read student details such as Roll, name,age, sex, qualification, percentage of marks etc. Write a servlet program that displays the same details.
		27	Create an HTML form to read student details such as Roll, name,age, sex, qualification, percentage of marks etc. Write a servlet program that displays the same details.
		28	Create an HTML form that reads a file name from the user. Write a servlet program that displays the contents of the file, specified by the user.
11	15-08-2022 To 19-08-2022	15 August	Independance Day
		29	Create an HTML form that reads a file name from the user. Write a servlet program that displays the contents of the file, specified by the user.
		18 August	Sree Krishna Jayanthi
		30	Session handling servlet that displays total number of visits to that page
		31	Session handling servlet that displays total number of visits to that page
12	22-08-2022 To 26-08-2022	32	Session handling servlet that displays total number of visits to that page
		33	Sample program-CORBA
		34	Sample program-CORBA
13	29-08-2022 To 02-09-2022	35	Sample program-CORBA
		36	Sample program-CORBA
		37	CORBA program for arithmetic operation.
14	05-06-2022 To 09-09-2022	05 September	ONAM VACATION
		06 September	ONAM VACATION
		07 September	ONAM VACATION
		08 September	ONAM VACATION
		09 September	ONAM VACATION
15	12-09-2022 To 16-09-2022	38	CORBA program for arithmetic operation.
		39	CORBA program for arithmetic operation.
16	19-09-2022	40	CORBA program for arithmetic operation.

No of Weeks	Dates	Session	Topic
	To 23-09-2022	21September	Sree Narayana Guru Samadhi
		41	CORBA program for arithmetic operation.
17	26-09-2022 To 30-09-2022	42	**II Internal Examination**
		43	**II Internal Examination**
		44	**II Internal Examination**
		45	**II Internal Examination**
		46	**II Internal Examination**
		47	**II Internal Examination**
18	03-10-2022 To 07-10-2022	48	CORBA program for arithmetic operation.
		04 October	Maha Navami
		05 October	Vijaya Dashami
		49	Sample program
19	**10-10-2022 To 14-10-2022**	50	Model exam
		51	**V Semester University Examination**
		52	**V Semester University Examination**
20	17-10-2022 To 21-10-2022	53	**V Semester University Examination**
		54	**V Semester University Examination**

Subject Code:	**5B12BCA**
Subject Name:	**Operating system**
No. of Credits:	**3**
No. of Contact Hours:	**72**
Hours per Week:	**4**
Name of the Teacher:	**Sindhu P M**

Unit I

OPERATING SYSTEMS OVERVIEW: Operating System Definition, Functions, OS as a resource manager, Types of OS, Evolution of OS, OS Structure, Operating system operations, Process Management, Memory Management, Storage Management, Protection and Security, Operating System Services, User Operating System Interface, System Calls, OS design and implementation, Operating System Structure. (14 Hrs)

Unit II

PROCESS MANAGEMENT: Processes: Process Concept, Process Scheduling, Operations on Processes, Inter process Communication. CPU Scheduling: Basic concepts, scheduling criteria, Scheduling algorithms. Deadlocks: System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock.(18Hrs)

Unit III

MEMORY MANAGEMENT: Memory management: Single contiguous allocation, Partitioned allocation, Relocatable partitioned, Paging, Demand paging, Segmentation, Segmentation and demand paging, Other schemes. (14 Hrs)

Unit IV

STORAGE MANAGEMENT: Mass Storage Structure: Overview, Disk Scheduling: (FCFS, SSTF, SCAN, C-SCAN ,Look) , Disk Management. RAID Structure. (14 Hrs)

Unit V:

File System interface: File Concepts, Directory and Disk Structure. Protection: Protection: Goals of protection, principles of protection, domain of protection, access matrix. (12 Hrs)

TEACHING SCHEDULE

No of Weeks	Dates	Session	Topic
1	06-06-2022 To 10-06-2022	1	Operating System Definition, Functions
		2	OS as a resource manager
		3	Types of OS
		4	Evolution of OS, OS Structure
2	13-06-2022 To 17-06-2022	5	Operating system operations
		6	Process Management
		7	Memory Management
		8	Storage Management
3	20-06-2022 To 24-06-2022	9	Protection and Security
		10	Operating System Services
		11	User Operating System Interface
		12	System Calls
4	27-06-2022 To 01-07-2022	13	OS design and implementation.
		14	**MODULE 1 EXAM**
		15	Process Concept
		16	Process Scheduling
5	04-07-2022 To 08-07-2022	17	Operations on Processes
		18	Inter process Communication.
		19	CPU Scheduling: Basic concepts
		20	Scheduling criteria
6	11-07-2022 To 15-07-2022	21	**I Internal Examination**
		22	**I Internal Examination**
		23	**I Internal Examination**
		24	**I Internal Examination**
		25	**I Internal Examination**
7	18-07-2022 To 22-07-2022	26	Scheduling algorithms.
		27	Deadlocks
		28	System Model
		29	Deadlock Characterization.
8	25-07-2022 To 29-07-2022	30	Methods for Handling Deadlocks
		31	Deadlock Prevention
		32	Deadlock Avoidance
		33	Deadlock Detection
		28 July	Karkidaka Vav
9	01-08-2022	34	Recovery from Deadlock

No of Weeks	Dates	Session	Topic
	To 05-08-2022	35	MODULE 2 EXAM
		36	Memory management: Single contiguous allocation
		37	Partitioned allocation
10	08-08-2022 To 12-08-2022	08 August	Muharam
		38	Relocatable partitioned
		39	Paging
		40	Paging
		41	Demand paging
11	15-08-2022 To 19-08-2022	15 August	Independance Day
		42	Demand paging
		18 August	Sree Krishna Jayanthi
		43	Segmentation
		44	Segmentation
12	22-08-2022 To 26-08-2022	45	Segmentation and demand paging
		46	Other schemes.
		47	Segmentation
		48	MODULE 3 EXAM
13	29-08-2022 To 02-09-2022	49	Storage management
		50	Mass Storage Structure: Overview
		51	Mass Storage Structure: Overview
		52	Disk Scheduling: (FCFS)
14	05-06-2022 To 09-09-2022	05 September	ONAM VACATION
		06 September	ONAM VACATION
		07 September	ONAM VACATION
		08 September	ONAM VACATION
		09 September	ONAM VACATION
15	12-09-2022 To 16-09-2022	53	SSTF
		54	SCAN
		55	C-SCAN
		56	Look
		57	Disk Management. RAID Structure.
16	19-09-2022 To 23-09-2022	58	**MODULE 4 EXAM**
		59	File System interface: File Concepts,
		21September	Sree Narayana Guru Samadhi
		60	Directory and Disk Structure..
		61	Protection: Goals of protection,
		62	Domain of protection
17	26-09-2022	63	Access matrix

No of Weeks	Dates	Session	Topic
	To 30-09-2022	64	**II Internal Examination**
		65	**II Internal Examination**
		66	**II Internal Examination**
		67	**II Internal Examination**
		68	**II Internal Examination**
18	03-10-2022 To 07-10-2022	69	**MODULE 5 EXAM**
		04 October	Maha Navami
		05 October	Vijaya Dashami
		70	REVISION MODULE1
		71	REVISION MODULE2
		72	REVISION MODULE3
19	**10-10-2022 To 14-10-2022**	67	REVISION MODULE4
		68	REVISION MODULE5
		69	**MODEL EXAM MODULES 1,2,&3**
		70	**MODEL EXAMMODULES 4&5**
		71	**V Semester University Examination**
		72	**V Semester University Examination**
20	17-10-2022 To 21-10-2022		**V Semester University Examination**
			V Semester University Examination

Subject Code:	**5B 14 BCA**
Subject Name:	**PYTHON PROGRAMMING**
No. of Credits:	**2**
No. of Contact Hours:	**36**
Hours per Week:	**2**
Name of the Teacher:	**VINEETHA MATHEW**

COURSE OUTCOME

CO1: Learn Python for expressing computation

CO2: Familiarize with functions and modules in python

CO3: Understand object-oriented programming concepts in Python

CO4: Learn the techniques for database connectivity and GUI programming in Python

SYLLABUS

Unit I

Basic Elements and Control Statements: Features of Python, Different Methods to Run Python, Basic Elements (Objects, Expressions, Numerical Types, Strings, Variables), Comments, Indentation in Python, Input and Output in Python, import function, Operators in Python, Branching (if, else, elif), Iteration (while, for), range and enumerate functions, Tuples, Lists, Sets, Dictionaries, Built-in methods of lists, sets and dictionaries, Mutable and Immutable Objects. (8 Hrs)

Unit II

Functions, Modules, File Handling and Exception Handling: Functions Definition, Function Calling, Function Arguments (Required, Keyword, Default), Recursion, Modules, Built-in Modules, Creating Modules, File Handling (Opening, Closing, Writing, Reading), Exceptions, Built-in Exceptions (IndexError, OverflowError, ZeroDivisionError, RuntimeError), Exception Handling. (8 Hrs)

Unit III

Object Oriented Programming, Arrays and Data Visualization: Class Definition, Object Creation, Built-in Attribute Methods, Object Oriented Programming Features of Python. Arrays in Python, Numpy Module, ndarray, Creating Arrays (array, zeros, ones, empty, linspace, arrange, random), Two-Dimensional Array, Indexing, Slicing, Iterating, Copying, Splitting, Shape Manipulation (reshape, transpose, resize),

Arithmetic Operations on Arrays. Data Visualization in Python matplotlib Module, pyplot, plot(), scatter, bar charts, Formatting, figure(), subplot(), text(), xlabel(), ylabel(), title(), Plotting Simple Mathematical Functions (sin x, x^2). (8 Hrs)

Unit IV

Connecting to Database: Connecting to a Database, Basic Operations on Database (Create, Insert, Update, Delete), Fetching Data from a Database, Transaction Control. (6 Hrs)

Unit V

GUI Programming: GUI Programming using Tkinter, Tkinter Widgets (Label, Message, Entry, Text, Button, tkMessagebox, RadioButton, Checkbutton, Listbox, Menu, Menubutton, Scale, Scrollbar, Canvas), Layout Managers. (6 Hrs)

Books for Study:

1. Dr. Jeeva Jose, Taming Python By Programming, Khanna Publishing

2. John V. Guttag, Introduction to Computation and Programming Using Python with Application to Understanding Data, PHI (2016)

3. https://www.numpy.org/devdocs/user/quickstart.html

4. https://matplotlib.org/users/pyplot_tutorial.html

Books for Reference:

1. Charles Dierbach, Introduction to Computer Science using Python, Wiley (2015)

2. https://www.tutorialspoint.com/python/

3. Python for Education by Ajith Kumar B P

4. https://docs.python.org/3/tutorial/index.html

5. Introduction to Computer Science and Programming Using Python Provided by Massachusetts Institute of Technology (MITx) - Available at : (https://www.edx.org/course/introduction-to-computer-science-and-programmingusing-python-2)

TEACHING SCHEDULE

No of Weeks	Dates	Session	Topic
1	06-06-2022 To 10-06-2022	1	Introduction, Features of Python, Different Methods to Run Python, Basic Elements (Objects, Expressions, Numerical Types, Strings, Variables), Comments, Indentation in Python.
		2	Input and Output in Python, import function, Operators in Python
2	13-06-2022 To 17-06-2022	3	Branching (if, else, elif), Iteration (while, for), range and enumerate functions
		4	Tuples, Lists, Sets, Dictionaries
3	20-06-2022 To 24-06-2022	5	Built-in methods of lists, sets and dictionaries, Mutable and Immutable Objects.
		6	**Unit I Exam**
4	27-06-2022 To 01-07-2022	7	Functions Definition, Function Calling, Function Arguments (Required, Keyword, Default), Recursion
		8	Modules, Built-in Modules, Creating Modules, File Handling (Opening, Closing, Writing, Reading)
5	04-07-2022 To 08-07-2022	9	Exceptions, Built-in Exceptions (IndexError, OverflowError, ZeroDivisionError, RuntimeError), Exception Handling.
		10	**Unit II Exam**
6	11-07-2022 To 15-07-2022	11	**I Internal Examination**
		12	**I Internal Examination**
		13	**I Internal Examination**
		14	**I Internal Examination**
		15	**I Internal Examination**
7	18-07-2022 To 22-07-2022	16	Class Definition, Object Creation, Built-in Attribute Methods, Object Oriented Programming Features of Python.
		17	Arrays in Python, Numpy Module, ndarray, Creating Arrays (array, zeros, ones, empty, linspace, arrange, random)
8	25-07-2022 To 29-07-2022	28 July	Karkidaka Vav
9	01-08-2022 To 05-08-2022	18	Two-Dimensional Array, Indexing, Slicing, Iterating, Copying, Splitting, Shape Manipulation (reshape, transpose, resize), Arithmetic Operations on Arrays.
		19	Data Visualization in Python matplotlib Module, pyplot, plot(), scatter, bar charts, Formatting, figure(), subplot(), text(), xlabel(), ylabel(), title(), Plotting Simple

No of Weeks	Dates	Session	Topic
			Mathematical Functions (sin x, x^2).
10	08-08-2022 To 12-08-2022	08 August	Muharam
		20	**Unit III Exam**
11	15-08-2022 To 19-08-2022	15 August	Independance Day
		18 August	Sree Krishna Jayanthi
12	22-08-2022 To 26-08-2022	21	Connecting to a Database, Basic Operations on Database (Create, Insert, Update, Delete), Fetching Data from a Database, Transaction Control.
		22	GUI Programming using Tkinter, Tkinter Widgets (Label, Message, Entry, Text, Button,
13	29-08-2022 To 02-09-2022	23	tkMessagebox, RadioButton, Checkbutton, Listbox, Menu,
		24	Menubutton, Scale, Scrollbar, Canvas), Layout Managers.
14	05-06-2022 To 09-09-2022	05 September	ONAM VACATION
		06 September	ONAM VACATION
		07 September	ONAM VACATION
		08 September	ONAM VACATION
		09 September	ONAM VACATION
15	12-09-2022 To 16-09-2022	25	Revision
		26	**Unit IV and V Exam**
16	19-09-2022 To 23-09-2022	21September	Sree Narayana Guru Samadhi
17	26-09-2022 To 30-09-2022	27	**II Internal Examination**
		28	**II Internal Examination**
		29	**II Internal Examination**
		30	**II Internal Examination**
		31	**II Internal Examination**
		32	**II Internal Examination**
18	03-10-2022 To 07-10-2022	04 October	Maha Navami
		05 October	Vijaya Dashami
19	**10-10-2022**	33	**V Semester University Examination**

No of Weeks	Dates	Session	Topic
	To 14-10-2022	34	**V Semester University Examination**
20	17-10-2022 To 21-10-2022	35	**V Semester University Examination**
		36	**V Semester University Examination**

Subject Code:	**6B 22 BCA**
Subject Name:	**LAB VI: PYTHON PROGRAMMING**
No. of Credits:	**3**
No. of Contact Hours:	**54**
Hours per Week:	**3**
Name of the Teacher:	**VINEETHA MATHEW**

Sample Program List

1. Write a program to find the largest from a list of numbers
2. Write a program to generate first n perfect numbers
3. Write a program to perform the binary search
4. Write a program to find the square root of a number using bisection search method.
5. Write a program to generate Fibonacci series using recursion
6. Write a program to find the LCM and GCD of 2 numbers
7. Write a program to perform merge sort
8. Write a program which reads the contents of a file and copy the contents to another file after changing all the letter to upper case. Exceptions should be handled.
9. Write a program to find the prime numbers in a list of numbers.
10. Write a python program to perform the following
    a) Create table students with fields name, sex, rollno, marks
    b) Insert some rows into the table
    c) Update the marks of all students by adding 2 marks
    d) Delete a student with a given rollno
    e) Display the details of a student with a given rollno
11. Create a simple Login window using Tkinter
12. Create a plot for the mathematical function x^2. The title of the plot and the axes should be labelled.

TEACHING SCHEDULE

No of Weeks	Dates	Session	Topic
1	06-06-2022 To 10-06-2022	1	Sample Program
		2	Sample Program
		3	Sample Program
2	13-06-2022 To 17-06-2022	4	Sample Program
		5	Sample Program
		6	Sample Program
3	20-06-2022 To 24-06-2022	7	Sample Program
		8	Write a program to find the largest from a list of numbers
		9	Write a program to generate first n perfect numbers
4	27-06-2022 To 01-07-2022	10	Write a program to perform the binary search
		11	Write a program to find the square root of a number using bisection search method.
		12	Sample Program
5	04-07-2022 To 08-07-2022	13	Sample Program
		14	Write a program to generate Fibonacci series using recursion
		15	
6	11-07-2022 To 15-07-2022	16	**I Internal Examination**
		17	**I Internal Examination**
		18	**I Internal Examination**
		19	**I Internal Examination**
		20	**I Internal Examination**
7	18-07-2022 To 22-07-2022	21	Sample Program
		22	Write a program to find the LCM and GCD of 2 numbers
		23	Sample Program
8	25-07-2022 To 29-07-2022	24	Sample Program
		28 July	Karkidaka Vav
		25	Write a program to perform merge sort
9	01-08-2022 To 05-08-2022	26	Sample Program
		27	Sample Program
		28	Sample Program
10	08-08-2022	08 August	Muharam
		29	Sample Program

No of Weeks	Dates	Session	Topic
	To 12-08-2022	30	Write a program which reads the contents of a file and copy the contents to another file after changing all the letter to upper case. Exceptions should be handled.
11	15-08-2022 To 19-08-2022	15 August	Independance Day
		18 August	Sree Krishna Jayanthi
		31	Sample Program
12	22-08-2022 To 26-08-2022	32	Sample Program
		33	Sample Program
		34	Write a program to find the prime numbers in a list of numbers.
13	29-08-2022 To 02-09-2022	35	Sample Program
		36	Sample Program
		37	Sample Database Program
14	05-06-2022 To 09-09-2022	05 September	ONAM VACATION
		06 September	ONAM VACATION
		07 September	ONAM VACATION
		08 September	ONAM VACATION
		09 September	ONAM VACATION
15	12-09-2022 To 16-09-2022	38	Write a python program to perform the following a) Create table students with fields name, sex, rollno, marks b) Insert some rows into the table c) Update the marks of all students by adding 2 marks d) Delete a student with a given rollno e) Display the details of a student with a given rollno
		39	Create a simple Login window using Tkinter
		40	Create a plot for the mathematical function x^2. The title of the plot and the axes should be labelled.
16	19-09-2022 To 23-09-2022	41	Lab Practice
		21September	Sree Narayana Guru Samadhi
		42	Lab Practice
17	26-09-2022 To 30-09-2022	43	**II Internal Examination**
		44	**II Internal Examination**
		45	**II Internal Examination**
		46	**II Internal Examination**
		47	**II Internal Examination**
18	03-10-2022 To 07-10-2022	04 October	Maha Navami
		05 October	Vijaya Dashami

No of Weeks	Dates	Session	Topic
19	10-10-2022 To 14-10-2022	48	**Internal Lab Exam**
		49	**V Semester University Examination**
		50	**V Semester University Examination**
20	17-10-2022 To 21-10-2022	51	**V Semester University Examination**
		52	**V Semester University Examination**
		53	**V Semester University Examination**
		54	**V Semester University Examination**

Subject Code:	**5B16BCA**
Subject Name:	**INFORMATION SECURITY**
No. of Credits:	**3**
No. of Contact Hours:	**72**
Hours per Week:	**4**
Name of the Teacher:	**SRUTHI N**

COURSE OUTCOME

CO1: To understand the need of information security and to master information security Concepts, mechanisms and services as well as issues related to information Security.

CO2: To be familiar with cryptography and its categories.

CO3: Distinguish public and private key crypto systems and familiarize the RSA crypto System.

CO4: To attain the knowledge of digital signature and its security services.

SYLLABUS

Unit I

Introduction to Information Security- The need for Security, Principles of security - confidentiality, Authentications, Integrity, Non-repudiation. Types of attacks- Passive attacks, Active attacks, Virus, Worm, Trojan horse. Introduction to Cryptography, Steganography, Secret Sharing. (14Hrs)

Unit II

Traditional symmetric Key Ciphers: Introduction-Kirchhoff's principle, cryptanalysis, categories of traditional ciphers; Substitution Ciphers – mono alphabetic ciphers, polyalphabetic ciphers; Transposition Ciphers - keyless and keyed transposition ciphers, Stream and Black Ciphers - stream ciphers, block ciphers. (16Hrs)

Unit III

Introduction, DES Structure - initial and final permutations, rounds, cipher and reverse cipher, examples; DES Analysis - properties, design criteria, DES weaknesses; Multiple DES - double DES, triple DES; Security of DES - brute-force attack, differential cryptanalysis, linear cryptanalysis. (16Hrs)

Unit IV

Principles of Public Key Cryptosystems- Public Key Cryptosystem, Applications of Key Cryptosystems, Requirement for Public Key Cryptosystem, Public Key Cryptanalysis. RSA Algorithm–Description of the Algorithm, Computational Aspects, Security of RSA. (13Hrs)

Unit V

Comparison- inclusion, verification method, relationship, duplicity; Process- needs for keys, signing the digest; Service- message authentication, message integrity, nonrepudiation, confidentiality; Attacks on Digital Signature- attack types; Digital Signature Schemes- RSA digital signature schemes (13Hrs)

Books for Study:

1. Behrouz A. Forouzan and DebdeepMukhopadhyay, Cryptography And Network Security, 3rd Ed, McGraw Hill (Units I, II, III, V)
2. William Stallings, Cryptography and Network Security - Principles and Practice Paperback, 7th Ed, Pearson(Unit IV)

Books for Reference:

1. Pieprzyk Josef, Hardjono Thomas and Seberry Jennifer, Fundamentals of Computer Security, Springer, 2003.

TEACHING SCHEDULE

No of Weeks	Dates	Session	Topic
1	06-06-2022 To 10-06-2022	1	Introduction to Information Security-
		2	The need for Security
		3	Principles of security - confidentiality, Authentications
		4	Integrity, Non-repudiation.
2	13-06-2022 To 17-06-2022	5	Types of attacks- Passive attacks
		6	Active attacks
		7	Virus, Worm
		8	Trojan horse.
3	20-06-2022 To 24-06-2022	9	Introduction to Cryptography
		10	Steganography
		11	Secret Sharing.
		12	Revision
4	27-06-2022 To 01-07-2022	13	Class Test
		14	Introduction-Traditional symmetric Key Ciphers
		15	Kirchhoff's principle
		16	Cryptanalysis
5	04-07-2022 To 08-07-2022	17	Categories of traditional ciphers
		18	Substitution Ciphers - monoalphabetic ciphers
		19	Monoalphabetic ciphers
		20	Monoalphabetic ciphers
6	11-07-2022 To 15-07-2022	21	**I Internal Examination**
		22	**I Internal Examination**
		23	**I Internal Examination**
		24	**I Internal Examination**
		25	**I Internal Examination**
7	18-07-2022 To 22-07-2022	26	Polyalphabetic ciphers
		27	Transposition Ciphers - keyless transposition ciphers
		28	Stream and Black Ciphers - stream ciphers, block ciphers.
		29	Revision
8	25-07-2022 To 29-07-2022	30	Class Test
		31	Introduction, DES Structure
		32	Initial and final permutations
		28 July	Karkidaka Vav
9	01-08-2022	34	Examples

No of Weeks	Dates	Session	Topic
	To 05-08-2022	35	Rounds
		36	Cipher and reverse cipher
		37	Examples
10	08-08-2022 To 12-08-2022	08 August	Muharam
		38	DES Analysis - Properties
		39	DES Analysis - Design criteria
		40	DES weaknesses
11	15-08-2022 To 19-08-2022	15 August	Independance Day
		42	Multiple DES - double DES
		18 August	Sree Krishna Jayanthi
		44	Security of DES - brute-force attack, differential cryptanalysis, linear cryptanalysis.
		45	Revision
12	22-08-2022 To 26-08-2022	46	Class Test
		47	Principles of Public Key Cryptosystems
		48	Public Key Cryptosystem
		49	Applications of Key Cryptosystems
13	29-08-2022 To 02-09-2022	50	Requirement for Public Key Cryptosystem
		51	Public Key Cryptanalysis.
		52	RSA Algorithm – Description of the Algorithm
		53	Example RSA
14	05-06-2022 To 09-09-2022	05 September	ONAM VACATION
		06 September	ONAM VACATION
		07 September	ONAM VACATION
		08 September	ONAM VACATION
		09 September	ONAM VACATION
15	12-09-2022 To 16-09-2022	54	Computational Aspects
		55	Security of RSA.
		56	Comparison- inclusion, verification method, relationship, duplicity
		57	Process- needs for keys
16	19-09-2022 To 23-09-2022	58	Signing the digest
		59	Service- message authentication, message integrity, nonrepudiation, confidentiality
		21September	Sree Narayana Guru Samadhi
		60	Attacks on Digital Signature- attack types;
		61	Digital Signature Schemes- RSA digital signature schemes

No of Weeks	Dates	Session	Topic
17	26-09-2022 To 30-09-2022	62	**II Internal Examination**
		63	**II Internal Examination**
		64	**II Internal Examination**
		65	**II Internal Examination**
		66	**II Internal Examination**
		67	**II Internal Examination**
18	03-10-2022 To 07-10-2022	68	Revision
		04 October	Maha Navami
		05 October	Vijaya Dashami
		69	Revision
		70	Class Test
		71	Previous Question Paper Discussion
19	**10-10-2022 To 14-10-2022**	72	Previous Question Paper Discussion
			V Semester University Examination
			V Semester University Examination
20	17-10-2022 To 21-10-2022		**V Semester University Examination**
			V Semester University Examination

Subject Code:	**5D03 BCA**
Subject Name:	**Database Management System**
No. of Credits:	**2**
No. of Contact Hours:	**36**
Hours per Week:	**2**
Name of the Teacher:	**SRUTHI N**

COURSE OUTCOME

GENERIC ELECTIVE COURSE:DATABASE MANAGEMENT SYSTEM

Module 1: Introduction-Field, Record Entity Attribute. Relation, Domain, Tuple-Advantages of database systems- data models (Network model, Hierarchical Model, DBTG CODASYL model, Relational Model(E-R)) - system structure

Module 2: Database administrator- data base users, Constraints(Primary, Foreign, Candidate, Unique - Relational Algebra (Union, Intersection, Difference, Product, Project, Selection).

Module 3: SQL: Introduction To SQL Tables,Database Languages, DDL(create,alter,drop), DML(insert into,select,update,delete), DCL (In Detail), Data Types.

Module 4: SQL Functions(Different Types of Functions),Operators(Arithmetic, Relational, Logical). Sub Queries (in Detail), Clauses(Having, Group By)

Module 5: Joins/Different Types of Join Statements) View. Introduction to Sequence

TEACHING SCHEDULE

No of Weeks	Dates	Session	Topic
1	06-06-2022 To 10-06-2022	1	Introduction-Field
		2	Record Entity Attribute
2	13-06-2022 To 17-06-2022	3	Relation, Domain, Tuple
		4	Advantages of database systems
3	20-06-2022 To 24-06-2022	5	Data models
		6	Network model

No of Weeks	Dates	Session	Topic
4	27-06-2022 To 01-07-2022	7	Hierarchical Model
		8	DBTG CODASYL model
5	04-07-2022 To 08-07-2022	9	Relational Model
		10	E-R
6	11-07-2022 To 15-07-2022	11	**I Internal Examination**
		12	**I Internal Examination**
		13	**I Internal Examination**
		14	**I Internal Examination**
		15	**I Internal Examination**
7	18-07-2022 To 22-07-2022	16	System structure
		17	Class Test –Module 1
8	25-07-2022 To 29-07-2022	18	Database administrator-,
		19	data base users
		28 July	Karkidaka Vav
9	01-08-2022 To 05-08-2022	20	Constraints
		21	Primary, Foreign
10	08-08-2022 To 12-08-2022	08 August	Muharam
		22	Candidate, Unique
		23	Relational Algebra, Union
11	15-08-2022 To 19-08-2022	15 August	Independance Day
		24	Intersection, Product, Project
		18 August	Sree Krishna Jayanthi
		25	Difference, Selection
12	22-08-2022 To 26-08-2022	26	Class Test-Module 2
		27	Introduction To SQL Tables,
13	29-08-2022 To 02-09-2022	28	Database Languages
		29	DDL(create,alter,drop)
14	05-06-2022 To 09-09-2022	05 September	ONAM VACATION
		06 September	ONAM VACATION
		07 September	ONAM VACATION
		08 September	ONAM VACATION
		09 September	ONAM VACATION
15	12-09-2022	30	DML(insert into,select,update,delete)

No of Weeks	Dates	Session	Topic
	To 16-09-2022	31	DCL, Data Types
16	19-09-2022 To 23-09-2022	32	Joins/Different Types of Join Statements).
		21September	Sree Narayana Guru Samadhi
		33	Attacks on Digital Signature- attack types;
17	26-09-2022 To 30-09-2022		**II Internal Examination**
			II Internal Examination
			II Internal Examination
			II Internal Examination
			II Internal Examination
			II Internal Examination
18	03-10-2022 To 07-10-2022	34	Introduction to Sequence
		04 October	Maha Navami
		05 October	Vijaya Dashami
		35	Class test
19	**10-10-2022 To 14-10-2022**	36	Previous Question Paper Discussion
			V Semester University Examination
			V Semester University Examination
20	17-10-2022 To 21-10-2022		**V Semester University Examination**
			V Semester University Examination