DON BOSCO ARTS & SCIENCE COLLEGE

ANGADIKADAVU

(Affiliated to Kannur University Approved by Government of Kerala)

ANGADIKADAVU P.O., IRITTY, KANNUR – 670706

COURSE PLAN

BCA

(2018 – 21)

SEMESTER - IV

ACADEMIC YEAR - (2019-20)

IV Semester BCA (2018 - 21)			
SL. No.	**Name of Subjects with Code**	**Name of the Teacher**	**Duty Hours per week**
1.	**4A14 BCA Numerical Analysis**	**Remya Raj**	**4**
2.	**4B08 BCA Operating System**	**Sindhu P. M.**	**4**
3.	**4B09 BCA Java Programming**	**Fincy Cyriac**	**4**
4.	**4B12 BCA Lab – IV Java Programming**	**Fincy Cyriac**	**3**
5.	**4B10 BCA Linux Administration**	**Vineetha Mathew**	**4**
6.	**4B12 BCA Lab – IV Shell Programming & Linux Administration**	**Vineetha Mathew**	**2**
7.	**4C04 MAT- Mathematics for BCA -IV**	**Fathimathul Nithasha Beegam I.**	**4**
	Name of Class Incharge	**Vineetha Mathew**	

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	4B12 BCA Lab – IV Shell Programming & Linux Administration	4A14 BCA Numerical Analysis	4B12 BCA Lab – IV Java Programming	4C04 MAT- Mathematics for BCA -IV	4B08 BCA Operating System
2	4B09 BCA Java Programming	4B08 BCA Operating System	4A14 BCA Numerical Analysis	4C04 MAT- Mathematics for BCA -IV	4B10 BCA Linux Administration
3	4C04 MAT- Mathematics for BCA -IV	4B12 BCA Lab – IV Java Programming	4B10 BCA Linux Administration	4A14 BCA Numerical Analysis	4B12 BCA Lab – IV Java Programming
4	4B09 BCA Java Programming	4B10 BCA Linux Administration	4C04 MAT- Mathematics for BCA -IV	4B08 BCA Operating System	4B12 BCA Lab – IV Shell Programming & Linux Administration
5	4B09 BCA Java Programming	4B10 BCA Linux Administration	4B08 BCA Operating System	4B09 BCA Java Programming	4A14 BCA Numerical Analysis

Subject Code:	**4A14 BCA**
Subject Name:	**Numerical Analysis**
No. of Credits:	**4**
No. of Contact Hours:	**72**
Hours per Week:	**4**
Name of the Teacher:	**Remya Raj**

Objective: -

- To expose students to computer-based numerical solutions.
- To impart basic theoretical knowledge underpinning numerical solutions to the following problems and also to provide an opportunity to apply programming skills

Module –I:

Introduction to Numerical Methods: Nature of numerical problems; computer based solutions; number representations; Notions of accuracy, convergence, efficiency, complexity-Floating point representation- Error- Significant Digits- Numerical Instability- Solutions of Non-linear equations: Bisection method; Regula-Falsi; Newton-Raphson.

Module – II:

System of Linear Equations- Gauss elimination, Gauss Jordan elimination, Triangulation method, Iterative method, Jacobi.

Module – III:

Numerical Integration & Differentiation: Concept of differentiation and Integration, graphical interpretation; Cubic Spline based Numerical Differentiation; Numerical Integration: Taylors series and Eulers methods- Simpson's Romberg, Gaussian, Runge Kutta methods.

Module – IV:

Mathematical Logic- Statement calculus- Connectives- Normal Forms- Theory of inference for the statement of Calculus.

Module – V:

Graph Theory- Basic concepts- Storage representation and manipulation of graphs

Prescribed Textbook

1. V. Rajaraman, Computer Oriented Numerical Methods, 3/e, PHI
2. Balagurusamy, E., "Numerical Methods", Tata McGraw-Hill, New Delhi, 1999.
3. Discrete Mathematical Structures with Application to Computer Science- McGraw Hill

Books for Reference

1. Kandasamy, P., Thilagavathy, K. and Gunavathy, K., "Numerical Methods", S.Chand Co. Ltd., New Delhi, 2003.
2. Burden, R.L and Faires, T.D., "Numerical Analysis", Seventh Edition, Thomson Asia Pvt. Ltd., Singapore, 2002.
3. N Datta, Computer Oriented Numerical Methods, Vikas

TEACHING SCHEDULE

No of Weeks	Dates	Session	Topic
1	29-10-2019 To 01-11-2019	1	IntroductiontoNumericalMethods:Natureofnumericalproblems;
		2	computerbasedsolutions, problems
		3	Problems
		4	numberrepresentations
		5	Problems
2	04-11-2019 To 08-11-2019	6	Notionsofaccuracy,convergence,efficiency
		7	complexity, problems
		8	Floatingpointrepresentation. Problems
		9	problems
		10	Error-SignificantDigits., problems
		11	NumericalInstability, examples
3	11-11-2019 To 15-11-2019	12	SolutionsofNon-linearequations:Bisectionmethod, problems
		13	problems
		14	Regula-Falsi;problems
		15	problems
		16	Newton-Raphson method, problems.
		17	Problems
4	18-11-2019 To 23-11-2019	18	**Class test**
		19 Nov	Union Inauguration
		19	SystemofLinearEquations-Gausselimination method, problems
		20	Problems
		21	Gauss Jordan elimination method, problems
		23 Nov	Sports Day
5	25-11-2019 To 29-11-2019		Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
6	01-12-2019		Semester Break

No of Weeks	Dates	Session	Topic
	To 05-12-2019		Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
7	09-12-2019 To 13-12-2019	22	Problems
		23	Triangulation method, problems
		24	Problems
		25	Jacobi iteration method, problems
		26	problems
		12 Dec	Arts Day
		13 Dec	Arts Day
8	16-12-2019 To 20-12-2019	27	Revision
		28	**Class test**
		29	NumericalIntegration&Differentiation:Conceptofdifferentiationand Integration
		30	graphicalinterpretation
		31	CubicSplinebasedNumericalDifferentiation, problems
		20 Dec	Christmas Celebration
9	23-12-2019 To 28-12-2019		Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
10	30-12-2019 To 03-01-2020	32	Problems
		33	Numerical Integration- Taylor's series, problems
		34	Problems
		02 Jan	MannamJayanthi – Holiday
		35	**Revision**
11	06-01-2020 To 10-01-2020	06 Jan	First Internal IV Semester UG
			First Internal IV Semester UG
		08 Jan	First Internal IV Semester UG
		36	Eulersmethods,problems
		37	Problems

No of Weeks	Dates	Session	Topic
		38	Simpson'sRomberg method, problems
12	13-01-2020 To 17-01-2020	39	Problems
		40	Gaussian integration method, problems
		41	Problems
		42	Runge Kutta method, problems
		43	Problems
		44	**Revision**
13	20-01-2020 To 24-01-2020	45	**Class test**
		46	MathematicalLogic-Statementcalculus, examples
		47	Connectives, examples
		48	Problems
		49	Normal Forms, examples
14	27-01-2020 To 31-01-2020	50	Problems
		51	Theory of inference for the statement of Calculus.
		52	Examples
		53	Problems
		54	**Revision**
15	03-02-2020 To 07-02-2020	55	**Class test**
		56	Graph Theory- Basic concepts
		57	Graph Theory- Basic concepts
		58	Graph Theory- Basic concepts
		59	Graph Theory- Basic concepts
16	10-02-2020 To 14-02-2020	60	Graph Theory- Basic concepts
		61	Storage representation and manipulation of graphs
		62	Storage representation and manipulation of graphs
		63	Storage representation and manipulation of graphs
		64	Storage representation and manipulation of graphs
17	17-02-2020 To 22-02-2020	65	Examples
		66	Examples
		67	Problems in graph theory
		21 Feb	Mahasivaratri – Holiday
		68	Problems in graph theory
18	24-02-2020 To 28-02-2020	24 Feb	College Day
		69	**Revision**
		70	**Revision of module 1 and 2**
		71	**Revision of module 3**
		72	**Class test**
19	02-03-2020	02 Mar	Second Internal IV Semester UG

No of Weeks	Dates	Session	Topic
	To 07-03-2020		Second Internal IV Semester UG
			Second Internal IV Semester UG
			Second Internal IV Semester UG
			Second Internal IV Semester UG
		07 Mar	Second Internal IV Semester UG
20	09-03-2020 To 13-03-2020		Study Leave
			Study Leave
			Study Leave
			Study Leave
			Study Leave
			Study Leave
21	16-03-2020 To 20-03-2020	16 mar	University Exam IV Semester UG Begin

Subject Code:	**4B08 BCA**
Subject Name:	**Operating System**
No. of Credits:	**3**
No. of Contact Hours:	**72**
Hours per Week:	**4**
Name of the Teacher:	**Sindhu P .M.**

Objective: -

- Introduce basic concepts of operating systems.
- Familiarize with features of operating systems.
- To expose the basics of design of operating systems.
- To get an overview of Linux.

Module –I:

Concepts – Importance – Resource manager – Views – Design considerations – I/O programming – Interrupt structure and processing. (Text Book 1) Batch Processing System – Multi programming system - Time Sharing System – Real Time System. (Text book 2)

Module – II:

Processor management: Process – interacting processes - Threads – Scheduling policies – job scheduling – process scheduling – Multi processor OS. Dead locks – Dead lock handling techniques. (Text book 2)

Module – III:

Memory management: Single contiguous allocation – Partitioned allocation – Relocatable partitioned – Paging – Demand paging – Segmentation – Segmentation and demand paging – Other schemes (Text book 1)

Module – IV:

Device management: Techniques – Channels and control units – I/O traffic controller, I/O scheduler, I/O device handlers – Virtual devices.Information management: Introduction – General model - SFS – BFS – ACV – LFS – PFS – ASM . (Text book 1)

Module – V:

Unix and Linux – History; over view; Process, memory management – I/O – file system – security. (Text Book 3)

Prescribed Textbook

1. Stuart E Madnick and John J Donovan, “Operating Systems”, Tata McGraw-Hill, 2005
2. Dhamdhere, “Systems Programming and Operating Systems”, 2nd Revised Edn, TMH
3. A. S. Tanenbaum, “Modern Operating systems”; PHI

TEACHING SCHEDULE

No of Weeks	Dates	Session	Topic
1	29-10-2019 To 01-11-2019	1	Concepts
		2	Importance
		3	Resource manager
		4	Views
		5	Design considerations
2	04-11-2019 To 08-11-2019	6	I/O programming
		7	I/O programming.
		8	Interrupt structure and processing.
		9	Interrupt structure and processing.
		10	Batch Processing System
		11	Multi programming system
3	11-11-2019 To 15-11-2019	12	Time Sharing System
		13	Real Time System.
		14	Revision
		15	MODULE 1 EXAM
		16	Processor management
		17	Process
4	18-11-2019 To 23-11-2019	18	Process
		19 Nov	Union Inauguration
		19	Interacting processes
		20	Interacting processes
		21	Threads
		23 Nov	Sports Day
5	25-11-2019 To 29-11-2019		Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
6	01-12-2019		Semester Break

No of Weeks	Dates	Session	Topic
	To 05-12-2019		Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
7	09-12-2019 To 13-12-2019	22	Threads
		23	Scheduling policies
		24	Job scheduling
		25	Job scheduling
		26	Process scheduling
		12 Dec	Arts Day
		13 Dec	Arts Day
8	16-12-2019 To 20-12-2019	27	Multi processor OS.
		28	Dead locks
		29	Dead lock handling techniques
		30	Dead lock handling techniques
		31	Revision
		20 Dec	Christmas Celebration
9	23-12-2019 To 28-12-2019		Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
10	30-12-2019 To 03-01-2020	32	MODULE 2 EXAM
		33	Memory management:
		34	Single contiguous allocation
		02 Jan	Mannam Jayanthi – Holiday
		35	Partitioned allocation
11	06-01-2020 To 10-01-2020	06 Jan	First Internal IV Semester UG
			First Internal IV Semester UG
		08 Jan	First Internal IV Semester UG
		36	Relocatable partitioned
		37	Paging
		38	Paging

No of Weeks	Dates	Session	Topic
12	13-01-2020 To 17-01-2020	39	Demand paging
		40	Segmentation
		41	Segmentation
		42	Segmentation and demand paging
		43	Other schemes
		44	Revision
13	20-01-2020 To 24-01-2020	45	MODULE 3 EXAM
		46	Device management
		47	Techniques
		48	Channels and control units
		49	I/O traffic controller
14	27-01-2020 To 31-01-2020	50	I/O scheduler
		51	I /O device handlers
		52	Virtual devices.
		53	Information management: Introduction.
		54	General model - SFS
15	03-02-2020 To 07-02-2020	55	BFS
		56	ACV
		57	LFS – PFS – ASM. Revision
		58	MODULE 4 EXAM
		59	Unix and Linux – History.
16	10-02-2020 To 14-02-2020	60	Over view
		61	Process
		62	Process
		63	Memory management
		64	Memory management
17	17-02-2020 To 22-02-2020	65	I/O
		66	File system
		67	Security.
		21 Feb	Mahasivaratri – Holiday
		68	Revision
18	24-02-2020 To 28-02-2020	24 Feb	College Day
		69	MODULE 5 EXAM
		70	QUESTION PAPER DISCUSSION
		71	MODEL EXAM
		72	QUESTION PAPER DISCUSSION
19	02-03-2020	02 Mar	Second Internal IV Semester UG

No of Weeks	Dates	Session	Topic
	To 07-03-2020		Second Internal IV Semester UG
			Second Internal IV Semester UG
			Second Internal IV Semester UG
			Second Internal IV Semester UG
		07 Mar	Second Internal IV Semester UG
20	09-03-2020 To 13-03-2020		Study Leave
			Study Leave
			Study Leave
			Study Leave
			Study Leave
			Study Leave
21	16-03-2020 To 20-03-2020	16 mar	University Exam IV Semester UG Begin

Subject Code:	**4B09 BCA**
Subject Name:	**Java Programming**
No. of Credits:	**3**
No. of Contact Hours:	**72**
Hours per Week:	**4**
Name of the Teacher:	**Fincy Cyriac**

Objective: -

- To review Object Oriented Programming concepts.
- Learn features of Java programming.
- To develop s kill in java programming.

Module –I:

Introduction to Java programming : Java technology; history; java as a new paradigm; features of java; Applications and applets (Simple examples); Java Development Kit Java Language fundamentals : Building blocks; Data types; variable declarations; wrapper classes; Operators and assignment; control structures; arrays; strings; String buffer classes.

Module – II:

Java as an OOP Language: Defining classes; Modifiers; Packages; Interfaces.

Module – III:

Exception handling: Basics; handling exceptions in java; (Try, catch, finally, multiple catch, nested try, throw); Exception and inheritance; Throwing user defined exceptions; Advantages of exception handling. Multithreading: Overview; Creating threads; thread life cycle; Priorities and scheduling; synchronization; Thread groups; communication of threads; Sample programs.

Module – IV:

Files and I/O streams: Overview; Java I/O; file streams; FileInputStram and FileOutputStream; Filter Streams; Random Access File; Serialization. Applets :

Introduction; Application vs. applets; Applet lifecycle; Working with Applets; The HTML APPLET tag; the java.Applet Package; Sample programs.

Module – V:

The Abstract Window Toolkit:- Basic classes in AWT; Drawing with Graphics class; Class hierarchy; Event handling; AWT controls (Labels, Buttons, checkbox, radio buttons; choice control; list, textbox, scroll bars); Layout Managers. The menu component hierarchy; Creating menus ; Handling events from menu items ; Enabling keyboard operation ; Bringing up a popup menu ; Customizing menu layout; The Menu API

Prescribed Textbook

1. Object Oriented Programming through JAVA, Radha Krishna, University Press

Books for Reference

1. Programming with java: A primer, 3rd Edn; E. Balaguruswami; McGraw Hill
2. Java 2 The complete Reference, Schildt, McGraw Hill

TEACHING SCHEDULE

No of Weeks	Dates	Session	Topic
1	29-10-2019 To 01-11-2019	1	Introduction to Java programming - Java technology; history
		2	Java as a new paradigm, features of java
		3	Applications and applets (Simple examples), Java Development Kit
		4	Java Language fundamentals - Building blocks
		5	Data types
2	04-11-2019 To 08-11-2019	6	Variable declarations
		7	Wrapper classes
		8	Operators and assignment
		9	Control structures
		10	Control structures
		11	Arrays
3	11-11-2019 To 15-11-2019	12	Strings
		13	String buffer classes
		14	Module 1 class test
		15	Java as an OOP Language- Defining classes;
		16	Modifiers
		17	Package
4	18-11-2019 To 23-11-2019	18	Interfaces.
		19 Nov	Union Inauguration
		19	Module 2 class test
		20	Exception handling: Basics;.
		21	Handling exceptions in java-Try, catch, finally,
		23 Nov	Sports Day
5	25-11-2019 To 29-11-2019		Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
6	01-12-2019		Semester Break
			Semester Break

No of Weeks	Dates	Session	Topic
	To 05-12-2019		Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
7	09-12-2019 To 13-12-2019	22	Handling exceptions in java- multiple catch, nested try, throw
		23	Exception and inheritance
		24	Throwing user defined exceptions
		25	Advantages of exception handling.
		26	Module 3- part 1 class test
		12 Dec	Arts Day
		13 Dec	Arts Day
8	16-12-2019 To 20-12-2019	27	Multithreading- Overview
		28	Creating threads
		29	thread life cycle
		30	Priorities andscheduling
		31	Synchronization
		20 Dec	Christmas Celebration
9	23-12-2019 To 28-12-2019		Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
10	30-12-2019 To 03-01-2020	32	Thread groups
		33	Communication of threads
		34	Sample programs
		02 Jan	Mannam Jayanthi – Holiday
		35	Module 3 – part 2 class test
11	06-01-2020 To 10-01-2020	06 Jan	First Internal IV Semester UG
			First Internal IV Semester UG
		08 Jan	First Internal IV Semester UG
		36	Files and I/O streams- Overview
		37	Java I/O, file streams
		38	FileInputStram

No of Weeks	Dates	Session	Topic
12	13-01-2020 To 17-01-2020	39	FileOutputStream
		40	Filter Streams
		41	Random Access File
		42	Serialization
		43	Module 4- part 1 class test
		44	Applets – Introduction
13	20-01-2020 To 24-01-2020	45	Application vs. applets
		46	Applet lifecycle
		47	Working with Applets
		48	The HTML APPLET tag
		49	The java.Applet Package
14	27-01-2020 To 31-01-2020	50	Sample programs
		51	Module 4- part 2 class test
		52	The Abstract Window Toolkit
		53	Basic classes in AWT
		54	Drawing with Graphics class
15	03-02-2020 To 07-02-2020	55	Class hierarchy
		56	Event handling
		57	AWT controls -Labels, Buttons, checkbox
		58	AWT controls - radio buttons, choice control
		59	AWT controls - list, textbox, scroll bars
16	10-02-2020 To 14-02-2020	60	Layout Managers.
		61	The menu component hierarchy
		62	Creating menus
		63	Handling events from menu items
		64	Enabling keyboard operation
17	17-02-2020 To 22-02-2020	65	Bringing up a popup menu
		66	Customizing menu layout
		67	The Menu API
		21 Feb	Mahasivaratri – Holiday
		68	Module 5 class test
18	24-02-2020 To 28-02-2020	24 Feb	College Day
		69	Revision and question paper discussion - module 1and 2
		70	Revision and question paper discussion - module 3
		71	Revision and question paper discussion - module 4
		72	Revision and question paper discussion - module 5
19	02-03-2020	02 Mar	Second Internal IV Semester UG
			Second Internal IV Semester UG

No of Weeks	Dates	Session	Topic
	To 07-03-2020		Second Internal IV Semester UG
			Second Internal IV Semester UG
			Second Internal IV Semester UG
		07 Mar	Second Internal IV Semester UG
20	09-03-2020 To 13-03-2020		Study Leave
			Study Leave
			Study Leave
			Study Leave
			Study Leave
			Study Leave
21	16-03-2020 To 20-03-2020	16 mar	University Exam IV Semester UG Begin

Subject Code:	**4B12 BCA Lab – IV**
Subject Name:	**Java Programming**
No. of Credits:	**3**
No. of Contact Hours:	**54**
Hours per Week:	**3**
Name of the Teacher:	**Fincy Cyriac**

Objective: -

- Practice all the programs in the lab

Java Programming

1. Write a java program to perform various string operations using java class.
2. Write java program to implement interface.
3. Write java program that handles various exceptions. Use try –catch statement.
4. Write java program to implement file I/O operation using java iostreams.
5. Write java program to implement Applet life cycle.
6. Write java program to implement a calculator using suitable AWT controls.
7. Write java program to implement menus and popup menus
8. With API suport write demo programs for menu display
9. Write a java program to demonstrate threads.
10. Demonstration of FileInput Stream and FileOutputStream Classes

TEACHING SCHEDULE

No of Weeks	Dates	Session	Topic
1	29-10-2019 To 01-11-2019	1	Sample program
		2	Sample program
		3	Sample program
2	04-11-2019 To 08-11-2019	4	Sample program
		5	Write a java program to perform various string operations using java class.
		6	Write a java program to perform various string operations using java class.
		7	Write a java program to perform various string operations using java class.
3	11-11-2019 To 15-11-2019	8	Write a java program to perform various string operations using java class.
		9	Write a java program to perform various string operations using java class.
		10	Write a java program to perform various string operations using java class.
		11	Write java program to implement interface.
4	18-11-2019 To 23-11-2019	12	Write java program to implement interface.
		19 Nov	Union Inauguration
		13	Write java program to implement interface.
		23 Nov	Sports Day
5	25-11-2019 To 29-11-2019		Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
6	01-12-2019 To 05-12-2019		Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break

No of Weeks	Dates	Session	Topic
			Semester Break
			Semester Break
7	**09-12-2019 To 13-12-2019**	14	Write java program that handles various exceptions. Use try –catch statement.
		15	Write java program that handles various exceptions. Use try –catch statement.
		16	Write java program that handles various exceptions. Use try –catch statement.
		12 Dec	**Arts Day**
		13 Dec	**Arts Day**
8	**16-12-2019 To 20-12-2019**	17	Write java program that handles various exceptions. Use try –catch statement.
		18	Write java program that handles various exceptions. Use try –catch statement.
		19	Write java program that handles various exceptions. Use try –catch statement.
		20 Dec	**Christmas Celebration**
9	**23-12-2019 To 28-12-2019**		**Christmas – Holiday**
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
10	**30-12-2019 To 03-01-2020**	20	Write java program to implement file I/O operation using java iostreams
		21	Write java program to implement file I/O operation using java iostreams
		22	Write java program to implement file I/O operation using java iostreams
		02 Jan	**Mannam Jayanthi – Holiday**
		23	Write java program to implement file I/O operation using java iostreams
11	**06-01-2020 To 10-01-2020**	**06 Jan**	**First Internal IV Semester UG**
			First Internal IV Semester UG
		08 Jan	**First Internal IV Semester UG**
		24	Write java program to implement Applet life cycle
		25	Write java program to implement Applet life cycle
		26	Write java program to implement Applet life cycle
12	**13-01-2020**	27	Write java program to implement Applet life cycle

No of Weeks	Dates	Session	Topic
	To 17-01-2020	28	Write java program to implement a calculator using suitable AWT controls.
		29	Write java program to implement a calculator using suitable AWT controls.
		30	Write java program to implement a calculator using suitable AWT controls.
13	20-01-2020 To 24-01-2020	31	Write java program to implement a calculator using suitable AWT controls.
		32	Write java program to implement a calculator using suitable AWT controls.
		33	Write java program to implement menus and popup menus
		34	Write java program to implement menus and popup menus
		35	Write java program to implement menus and popup menus
14	27-01-2020 To 31-01-2020	36	Write java program to implement menus and popup menus
		37	Write java program to implement menus and popup menus
		38	With API support write demo programs for menu display
		39	With API support write demo programs for menu display
		40	With API support write demo programs for menu display
15	03-02-2020 To 07-02-2020	41	With API support write demo programs for menu display
		42	With API support write demo programs for menu display
		43	Write a java program to demonstrate threads
		44	Write a java program to demonstrate threads
16	10-02-2020 To 14-02-2020	45	Write a java program to demonstrate threads
		46	Write a java program to demonstrate threads
		47	Write a java program to demonstrate threads
		48	Demonstration of FileInputStream and FileOutputStream Classes
17	17-02-2020 To 22-02-2020	49	Demonstration of FileInputStream and FileOutputStream Classes
		50	Demonstration of FileInputStream and FileOutputStream Classes
		21 Feb	Mahasivaratri – Holiday
		51	Demonstration of FileInputStream and FileOutputStream Classes
18	24-02-2020 To 28-02-2020	24 Feb	College Day
		52	Demonstration of FileInputStream and FileOutputStream Classes
		53	Model exam program 1-5
		54	Model exam program 6-10
	02-03-2020	02 Mar	Second Internal IV Semester UG
			Second Internal IV Semester UG

No of Weeks	Dates	Session	Topic
19	To 07-03-2020		Second Internal IV Semester UG
			Second Internal IV Semester UG
			Second Internal IV Semester UG
		07 Mar	Second Internal IV Semester UG
20	09-03-2020 To 13-03-2020		Study Leave
			Study Leave
			Study Leave
			Study Leave
			Study Leave
			Study Leave
21	16-03-2020 To 20-03-2020	16 mar	University Exam IV Semester UG Begin

Subject Code:	**4B10 BCA**
Subject Name:	**Linux Administration**
No. of Credits:	**3**
No. of Contact Hours:	**72**
Hours per Week:	**4**
Name of the Teacher:	**Vineetha Mathew**

Objective: -

- Introduce Linux working environment
- Understand how to install and configure Linux
- Learn how to write shell scripts

Module –I:

Features and benefits of Linux- basic concepts of multi user system-open source, freedom-Linux-components of Linux, types of users in Linux, types of files. Introduction login, password, creating an account, shell and commands, logout, changing password files and directories-pathname-directory tree-current working directory-referring home directory-creating new directories, copying files, moving files, deleting files and directories types of shell-wild cards-hidden files- looking at files: cat, more-online help:man.

Module – II:

Vi editor-different modes-command mode, insert mode, last line mode- redirecting input/output-filter, pipes, file permissions, user, group, changing file permissions - mounting floppy,HDD, CDROM-file systems-structure of /etc/fstab- Bourne shell scripts: script execution-variables and parameters, if, for, case, while constructs.

Module – III:

Linux Administration: Introduction-various parts of the OS-kernel, system program, application program, system calls-important parts of the kernel. Boot procesS: booting- LILO boot process,/edc/lilo.conf, GRUB, /etc/grub.conf-runlevels-GUI,X windows- rc files, startup scripts.

Module – IV:

Major services in linux system : init,/etc/inittab file -login from terminal3, syslogperiodic command execution: at and cron, crontab fileSystem configurationfiles:/etc/sysconfig/.....files,keyboard,mouse etc. System security: password,/etc/passwd file-shadow password,/etc/shadow-file permissions, chmod and umask-adding and deleting users-host security, tcp wrappers,/etc/host.allow, /etc/host.deny.

Module – V:

System Maintance: tmpwatch-logrotate-basic system backup and restore operation-Basic shell configuration for bourne and bash shell : /etc/profile,~/.bashrc,~/.bash_profile.Linux Installalation : Partitioning, MBR, SWAP, filesystem managing-different packages, rpm-installation of packages-starting and stopping different services.

Prescribed Textbook

1. Unix Shell Programming, Yeshwanth kanethkar

Books for Reference

1 Unix in a nut shell,by Daniel Gilly, O'Reilly & Associates
2 Linux Administration handbook, Nemeth, PHI
3 Essential System Administration, O'reilly & Associates.
4 Red Hat linux Bible
5 A user guide to the unix system, Thomas,Yates Tata McGraw Hill

TEACHING SCHEDULE

No of Weeks	Dates	Session	Topic
1	29-10-2019 To 01-11-2019	1	Features and benefits of Linux-
		2	Basic concepts of multi user system-open source
		3	Freedom-Linux
		4	Components of Linux, types of users in Linux
		5	Types of files
2	04-11-2019 To 08-11-2019	6	Introduction login, password, creating an account
		7	Shell and commands, logout, changing password
		8	Files and directories-pathname-directory tree-current working directory-referring home directory
		9	Creating new directories, copying files, moving files, deleting files and directories
		10	types of shell-wild cards-hidden files- looking at files: cat
		11	More-online help:man
3	11-11-2019 To 15-11-2019	12	Question Paper Discussion
		13	Class Test
		14	Vi editor-different modes-command mode, insert mode, last line mode
		15	Redirecting input/output-filter, pipes
		16	File permissions, user, group, changing file permissions
		17	Mounting floppy,HDD, CDROM
4	18-11-2019 To 23-11-2019	18	File systems
		19 Nov	Union Inauguration
		19	Structure of /etc/fstab- Bourne shell scripts: script execution
		20	Variables and parameters, if, for
		21	Case, while constructs
		23 Nov	Sports Day
5	25-11-2019 To 29-11-2019		Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break

No of Weeks	Dates	Session	Topic
			Semester Break
6	**01-12-2019 To 05-12-2019**		**Semester Break**
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
7	**09-12-2019 To 13-12-2019**	22	Question Paper Discussion
		23	Class Test
		24	Linux Administration: Introduction
		25	Various parts of the OS-kernel, system program, application program
		26	System calls-important parts of the kernel
		12 Dec	**Arts Day**
		13 Dec	**Arts Day**
8	**16-12-2019 To 20-12-2019**	27	Boot process: booting
		28	LILO boot process,/edc/lilo.conf
		29	GRUB, /etc/grub.conf-runlevels
		30	GUI,X windows
		31	rc files, startup scripts
		20 Dec	**Christmas Celebration**
9	**23-12-2019 To 28-12-2019**		**Christmas – Holiday**
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
10	**30-12-2019 To 03-01-2020**	32	Question Paper Discussion
		33	Revision
		34	Class Test
		02 Jan	**Mannam Jayanthi – Holiday**
		35	Major services in linux system
11	**06-01-2020 To**	**06 Jan**	**First Internal IV Semester UG**
			First Internal IV Semester UG
		08 Jan	**First Internal IV Semester UG**

No of Weeks	Dates	Session	Topic
	10-01-2020	36	init,/etc/inittab file -login from terminal
		37	Syslog periodic onfiguration filcommand execution: at and cron, crontab file System
		38	/etc/sysconfig/.....files, keyboard, mouse etc.
12	13-01-2020 To 17-01-2020	39	System security: password,/etc/passwd file
		40	Shadow password,/etc/shadow
		41	File permissions, chmod and umask
		42	Adding and deleting users-host security
		43	tcp wrappers,/etc/host.allow, /etc/host.deny
		44	Question Paper Discussion
13	20-01-2020 To 24-01-2020	45	Revision
		46	Class Test
		47	System Maintance : tmpwatch-logrotate
		48	Basic system backup and restore operation-
		49	Basic shell configuration for bourne and bash shell :
14	27-01-2020 To 31-01-2020	50	/etc/profile,~/.bashrc,~/.bash_profile.
		51	Linux Installalation
		52	Partitioning, MBR, SWAP,
		53	Filesystem managing
		54	Different packages, rpm
15	03-02-2020 To 07-02-2020	55	Installation of packages
		56	Starting and stopping different services.
		57	Question Paper Discussion
		58	Revision
		59	Class Test
16	10-02-2020 To 14-02-2020	60	Seminar
		61	Seminar
		62	Seminar
		63	Question Paper Discussion
		64	Question Paper Discussion
17	17-02-2020 To 22-02-2020	65	Question Paper Discussion
		66	Revision
		67	Revision
		21 Feb	Mahasivaratri – Holiday
		68	Revision
18	24-02-2020 To	24 Feb	College Day
		69	Revision
		70	Revision

No of Weeks	Dates	Session	Topic
	28-02-2020	71	Revision
		72	Revision
19	02-03-2020 To 07-03-2020	02 Mar	Second Internal IV Semester UG
			Second Internal IV Semester UG
			Second Internal IV Semester UG
			Second Internal IV Semester UG
			Second Internal IV Semester UG
		07 Mar	Second Internal IV Semester UG
20	09-03-2020 To 13-03-2020		Study Leave
			Study Leave
			Study Leave
			Study Leave
			Study Leave
			Study Leave
21	16-03-2020 To 20-03-2020	16 mar	University Exam IV Semester UG Begin

Subject Code:	**4B12 BCA Lab – IV**
Subject Name:	**Shell Programming & Linux Administration**
No. of Credits:	**3**
No. of Contact Hours:	**36**
Hours per Week:	**2**
Name of the Teacher:	**Vineetha Mathew**

Objective: -

- Practice **all** the programs in the lab

Shell Scripts and Linux Administration (minimum 10)

1. Shell Script Program to perform all Arithmetic operations
2. Shell Script Program to find simple interest
3. Shell Script Program to find Area of Square, Rectangle, Circle
4. Shell Script Program to print your Address 'n' times
5. Shell Script Program to find whether number is even or odd
6. Shell Script Program to find whether number is +ve, -ve or 0
7. Shell Script Program to find Greatest of 3 numbers
8. Shell Script Program to whether year is Leap year or not
9. Shell Script Program to print natural numbers from 1 to 10 using WHILE loop
10. Shell Script Program to print perfect numbers from 1 to 100
11. Shell Script Program to reverse a number
12. Shell Script Program to find whether the given number is perfect or not

- Linux installation, upgradation and rescue.
- Boot loader configuration using GRUB
- Managing the run level.
- Starting and stoping services in runlevel.
- The service command
- Manging process- viewing status, killing , restarting etc using ps.
- Adding and deleting user accounts, changing passwords.
- Changing the environment variables like PATH
- Scheduling jobs using cron
- Managing kernel modules
- Mounting and unmounting external file systems
- Setting the value of umask, changing the permissions, changing owner and groups
- Installation and removal of packages
- Installation of a peripheral devices (e.g printer)
- Archiving and Backup using tar. Restoring backup
- Compressing and uncompressing files using any one tool

TEACHING SCHEDULE

No of Weeks	Dates	Session	Topic
1	29-10-2019 To 01-11-2019	1	Sample Program
		2	Sample Program
2	04-11-2019 To 08-11-2019	3	Sample Program
		4	Sample Program
		5	Sample Program
3	11-11-2019 To 15-11-2019	6	Sample Program
		7	Sample Program
		8	Shell Script Program to perform all Arithmetic operations
4	18-11-2019 To 23-11-2019	9	Shell Script Program to find simple interest
		19 Nov	Union Inauguration
		23 Nov	Sports Day
5	25-11-2019 To 29-11-2019		Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
6	01-12-2019 To 05-12-2019		Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
7	09-12-2019 To 13-12-2019	10	Shell Script Program to find Area of Square, Rectangle, Circle
		12 Dec	Arts Day
		13 Dec	Arts Day

No of Weeks	Dates	Session	Topic
8	16-12-2019 To 20-12-2019	11	Shell Script Program to print your Address ‘n’ times
		12	Shell Script Program to find whether number is even or odd
		13	Shell Script Program to find whether number is +ve, -ve or 0
		20 Dec	Christmas Celebration
9	23-12-2019 To 28-12-2019		Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
10	30-12-2019 To 03-01-2020	14	Shell Script Program to find Greatest of 3 numbers
		02 Jan	Mannam Jayanthi – Holiday
		15	Shell Script Program to whether year is Leap year or not
11	06-01-2020 To 10-01-2020	06 Jan	First Internal IV Semester UG
			First Internal IV Semester UG
		08 Jan	First Internal IV Semester UG
		16	Shell Script Program to print natural numbers from 1 to 10 using WHILE loop
12	13-01-2020 To 17-01-2020	17	Shell Script Program to print perfect numbers from 1 to 100
		18	Shell Script Program to reverse a number
		19	Shell Script Program to find whether the given number is perfect or not
		20	Model Exam
13	20-01-2020 To 24-01-2020	21	Linux installation, upgradation and rescue.
		22	Boot loader configuration using GRUB
		23	Managing the run level.
14	27-01-2020 To 31-01-2020	24	Starting and stoping services in runlevel.
		25	The service command
		26	Manging process- viewing status, killing , restarting etc using ps.
15	03-02-2020 To 07-02-2020	27	Adding and deleting user accounts, changing passwords.
		28	Changing the environment variables like PATH Scheduling jobs using cron
		29	Managing kernel modules
16	10-02-2020	30	Mounting and unmounting external file systems

No of Weeks	Dates	Session	Topic
	To 14-02-2020	31	Setting the value of umask, changing the permissions, changing owner and groups
		32	Installation and removal of packages
17	17-02-2020 To 22-02-2020	33	Installation of a peripheral devices (e.g printer)
		21 Feb	Mahasivaratri – Holiday
		34	Archiving and Backup using tar. Restoring backup
18	24-02-2020 To 28-02-2020	24 Feb	College Day
		35	Compressing and uncompressing files using any one tool
		36	Model Exam
19	02-03-2020 To 07-03-2020	02 Mar	Second Internal IV Semester UG
			Second Internal IV Semester UG
			Second Internal IV Semester UG
			Second Internal IV Semester UG
			Second Internal IV Semester UG
		07 Mar	Second Internal IV Semester UG
20	09-03-2020 To 13-03-2020		Study Leave
			Study Leave
			Study Leave
			Study Leave
			Study Leave
			Study Leave
21	16-03-2020 To 20-03-2020	16 mar	University Exam IV Semester UG Begin

Subject Code:	**4C04 MAT**
Subject Name:	**Mathematics for BCA -IV**
No. of Credits:	**3**
No. of Contact Hours:	**72**
Hours per Week:	**4**
Name of the Teacher:	**Fathimathul Nithasha Beegam I.**

Module –I: Basic Statistics (25 hrs)

Basic Probability: Expectation (Section 3.7 of Text 1). Random Variables: Introduction, Random variable, Expectation of a finite random variable, Variance and standard deviation, Joint distribution of random variables, Independent random variables, Functions of a random variable, Discrete random variables in general, Continuous random variables, Cumulative distribution function, Chebyshev's Inequality and the Law of large numbers (Sections 5.1 to 5.12 of Text 1).

Module – II: Linear Programming (25 hrs)

Mathematical Formulation – simple examples (Sections 2.1 and 2.2 of Text 2).Graphical Solution (Sections 3.2, 3.4 and 3.5 of Text 2). Simplex Method [Sections 4.1, 4.2 (Results Only) and 4.3 of Text 2]. Transportation Problems (Sections 10.1, 10.2, 10.3, 10.5, 10.8, 10.9, 10.10, 10.11 and 10.12 of Text 2).

Module – III: Numerical Analysis – I (25 hrs)

Solution of Algebraic and Transcendental Equation: Bisection Method, Method of false position, Newton-Raphson Method. (Chapter 2 Sections 2.2, 2.3 and 2.5 of Text 3)
Finite Differences : Forward differences, Backward differences. (Chapter 3 Sections 3.3.1 and 3.3.2 of Text 3)
Interpolation: Newton's formulae for interpolation, Langrange's interpolation formula, Divided differences and their properties. (Chapter 3 Sections 3.6, 3.9.1 and 3.10 of Text 3)
Numerical Differentiation and Integration: Numerical differentiation (using Newton's forward and backward formulae), Numerical Integration, Trapezoidal Rule, Simpson's 1/3- Rule. (Chapter 5 Sections 5.2, 5.4, 5.4.1 and 5.4.2 of Text 3)

Module – IV: Numerical Analysis – II (15 hrs)

Numerical Solutions of Ordinary Differential Equations: Introduction, Solution by Taylor's series, Picard's method of successive approximations, Euler's method,

Modified Euler's method, Runge-Kutta method. (Sections 7.1 to 7.4, 7.4.2 and 7.5 of Text 2)

Prescribed Textbook

1. S. Lipschutz, J. Schiller, Introduction to Probablity and Statistics, Schaum's Outlines.
2. K. Swaroop, P K. Gupta and M. Mohan, Operations Research, 12th Edition, Sulthan Chand & Sons.
3. S. S. Sastry, Introductory Methods of Numerical Analysis, 4th Edition, PHI.

Books for Reference

References:

1. S. S. Rao, *Numerical Methods of Scientists and Engineers*, 3rd Edition, PHI.
2. J. K. Sharma, Operations Research -Theory and Applications, McMillan, New Delhi.
3. G. Hadley, Linear Programming, Oxford & IBH Publishing Company, New Delhi.
4. H. A. Thaha, Operations Research- An Introduction, 8th Edition, Prentice Hall.

TEACHING SCHEDULE

No of Weeks	Dates	Session	Topic
1	29-10-2019 To 01-11-2019	1	Solution of algebraic and Transcendental equations : Introduction
		2	Bisection method and examples
		3	Method of false position
		4	Examples
		5	Newton Raphson method & Examples
2	04-11-2019 To 08-11-2019	6	Examples
		7	Class Test
		8	Forward differences & Examples
		9	Backward differences & Examples
		10	Basic Probability
		11	Random Variables
3	11-11-2019 To 15-11-2019	12	Discrete and continuous random variables
		13	Expectation of random variables and proofs
		14	Variance and standard deviation
		15	Joint distribution of random variables
		16	Examples
		17	Examples
4	18-11-2019 To 23-11-2019	18	Problems of joint distribution of random variables
		19 Nov	Union Inauguration
		19	Tchebyshev's Inequality
		20	Law of large numbers
		21	Revision.
		23 Nov	Sports Day
5	25-11-2019 To 29-11-2019		Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
6	01-12-2019 To		Semester Break
			Semester Break
			Semester Break

	05-12-2019		Semester Break
			Semester Break
			Semester Break
			Semester Break
			Semester Break
7	09-12-2019 To 13-12-2019	22	Newton's formulae for interpolation
		23	Examples
		24	Lagrange Interpolation formulae
		25	Examples
		26	Examples
		12 Dec	Arts Day
		13 Dec	Arts Day
8	16-12-2019 To 20-12-2019	27	Introduction-module 2
		28	Mathematical Formulation of an LPP.
		29	Graphical Solution method.
		30	Examples.
		31	Simplex Method.
		20 Dec	Christmas Celebration
9	23-12-2019 To 28-12-2019		Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
			Christmas – Holiday
10	30-12-2019 To 03-01-2020	32	Examples.
		33	Class test
		34	Transportation Problems
		02 Jan	Mannam Jayanthi – Holiday
		35	Transportation Problems
11	06-01-2020 To 10-01-2020	06 Jan	First Internal IV Semester UG
			First Internal IV Semester UG
		08 Jan	First Internal IV Semester UG
		36	Transportation table.
		37	Loops in a transportation table.
		38	Definitions and examples.
12	13-01-2020 To 17-01-2020	39	Divided difference and their properties
		40	Numerical differentiation using difference formulae
		41	Examples
		42	Examples

		43	Numerical integration: Trapezoidal rule
		44	Examples
13	20-01-2020 To 24-01-2020	45	Simpson's 1/3 rule & Examples
		46	Examples
		47	Examples
		48	Class test
		49	Numerical Solutions of ordinary differential equations: Introduction
14	27-01-2020 To 31-01-2020	50	Solution by Taylor series
		51	Examples
		52	Examples
		53	Picard's method of successive approximations
		54	Examples
15	03-02-2020 To 07-02-2020	55	Examples
		56	Euler's method
		57	Examples
		58	Examples
		59	Class test
16	10-02-2020 To 14-02-2020	60	Modified Euler method
		61	Examples
		62	Examples
		63	Examples
		64	Runge – Kutta method
17	17-02-2020 To 22-02-2020	65	Examples
		66	Examples
		67	Examples
		21 Feb	Mahasivaratri – Holiday
		68	Examples
18	24-02-2020 To 28-02-2020	24 Feb	College Day
		69	Revision & practice problems
		70	Revision & practice problems
		71	Revision & practice problems
		72	Revision & practice problems
19	02-03-2020 To 07-03-2020	02 Mar	Second Internal IV Semester UG
			Second Internal IV Semester UG
			Second Internal IV Semester UG
			Second Internal IV Semester UG
			Second Internal IV Semester UG
		07 Mar	Second Internal IV Semester UG
20	09-03-2020		Study Leave

	To 13-03-2020		Study Leave
			Study Leave
			Study Leave
			Study Leave
			Study Leave
21	16-03-2020 To 20-03-2020	16 mar	University Exam IV Semester UG Begin