KONGU ARTS AND SCIENCE COLLEGE

(An Autonomous Institution, Affiliated to Bharathiar University, Coimbatore)

ERODE – 638 107

B.Sc (Computer Science)

KONGU ARTS AND SCIENCE COLLEGE

(An Autonomous Institution, Affiliated to Bharathiar University, Coimbatore)

ERODE – 638 107

2020-2021

KONGU ARTS AND SCIENCE COLLEGE

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ERODE – 638 107

B.Sc. COMPUTER SCIENCE

(For the candidates admitted during the academic year 2020 – 2021 and onwards)

SCHEME OF EXAMINATION – CBCS PATTERN

Part	Course Code	Course Title	Inst. Hrs /Week	T/P	Examination Details				Credits
					Duration in Hours.	CIA	ESE	Total Marks	
SEMESTER I									
I	20T01/20H01/ 20F01/20M01/ 20S01	Language – I	6	T	3 Hrs	25	75	100	4
II	20E01	English – I	6	T	3 Hrs	25	75	100	4
III	20UAKCT101	Core 1: Programming in C	4	T	3 Hrs	25	75	100	4
III	20UAKCT102	Core 2: Digital Fundamentals and Computer Architecture	4	T	3 Hrs	25	75	100	4
III	20UAKCP103	Core Lab 1: Programming Lab – C with Linux	3	P	3 Hrs	40	60	100	3
III	20UAKAT104	Allied 1: Numerical and Statistical Methods	5	T	3 Hrs	25	75	100	4
IV	20ES01	Foundation Course I: Environmental Studies	2	T	3 Hrs	-	50	50	2
		Total	**30**					**650**	**25**
SEMESTER II									
I	20T02/20H02/ 20F02/20M02/ 20S02	Language – II	6	T	3 Hrs	25	75	100	4
II	20E02	English – II	6	T	3 Hrs	25	75	100	4
III	20UAKCT201	Core 3: Python Programming	4	T	3 Hrs	25	75	100	4
III	20UAKCT202	Core 4: Data Structures and Algorithms	4	T	3 Hrs	25	75	100	4
III	20UAKCP203	Core Lab2 : Programming Lab- Python	3	P	3 Hrs	40	60	100	3
III	20UAKAT204	Allied 2: Discrete Mathematics	5	T	3 Hrs	25	75	100	4
IV	20VE01	Foundation Course II: Value Education	2	T	3 Hrs	-	50	50	2
		Total	**30**					**650**	**25**

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Part	Course Code	Course Title	Inst. Hrs/Week	T/P	Examination Details				Credits
					Duration in Hours.	CIA	ESE	Total Marks	
SEMESTER III									
III	20UAKCT301	Core 5: Operating Systems	6	T	3 Hrs	25	75	100	4
III	20UAKCT302	Core 6: Java Programming	6	T	3 Hrs	25	75	100	4
III	20UAKCP303	Core Lab 3: Programming Lab- Java	6	P	3 Hrs	40	60	100	4
III	20UAKAT304	Allied 3: Computer Based Optimization Techniques	6	T	3 Hrs	25	75	100	4
IV	20UAKSP305	Skill Based Course 1 (Lab): Multimedia Lab	4	P	3 Hrs	30	45	75	3
IV	20BT01/ 20AT01/ 20UAKNT306	Basic Tamil * / Advanced Tamil # (OR) Non-Major Elective - I : Internet Principles @	2	T	3 Hrs	75		75	2
		Total	**30**					**550**	**21**
SEMESTER IV									
III	20UAKCT401	Core 7 : Software Engineering	6	T	3 Hrs	25	75	100	4
III	20UAKCT402	Core 8: Web Programming	6	T	3 Hrs	25	75	100	4
III	20UAKCP403	Core Lab 4: Web Programming Lab	6	P	3 Hrs	40	60	100	4
III	20UAKAT404	Allied-4: Business Accounting	6	T	3 Hrs	25	75	100	4
IV	20UAKSP405	Skill Based Course 2 (Lab): User Interface Design Lab using FOSS	4	P	3 Hrs	30	45	75	3
IV	20BT02/ 20AT02/ 20UAKNT406	Basic Tamil * /Advanced Tamil # (OR) Non-Major Elective - II : Information Security and Cyber Laws @	2	T	3 Hrs	75		75	2
		Total	**30**					**550**	**21**

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Part	Course code	Course Title	Inst. Hrs /Week	T/P	Examination Details				Credits
					Duration in Hours.	CIA	ESE	Total Marks	
SEMESTER V									
III	20UAKCT501	Core 9: Computer Networks	6	T	3 Hrs	25	75	100	5
III	20UAKCT502	Core 10: Visual Basic and VB.net	5	T	3 Hrs	25	75	100	4
III	20UAKCT503	Core 11: Relational Database Management System	5	T	3 Hrs	25	75	100	4
III	20UAKCP504	Core Lab 5: Programming Lab - Visual Basic, VB.net and Oracle	5	P	3 Hrs	40	60	100	4
III	20UAKET505/ 20UAKET506/ 20UAKET507	Elective - I :	6	T	3 Hrs	25	75	100	4
IV	20UAKSP508	Skill Based Course 3(Lab): Networking Lab	3	P	3 Hrs	30	45	75	3
		Total	**30**					**575**	**24**
SEMESTER VI									
III	20UAKCT601	Core 12: Internet of Things (IoT)	6	T	3 Hrs	25	75	100	4
III	20UAKCP602	Core Lab 6: Internet of Things (IoT) Lab	5	P	3 Hrs	40	60	100	4
III	20UAKET603/ 20UAKET604/ 20UAKET605	Elective - II :	6	T	3 Hrs	25	75	100	4
III	20UAKET606/ 20UAKET607/ 20UAKET608	Elective III :	6	T	3 Hrs	25	75	100	4
III	20UAKCV609	Project Work Lab :	4	P	3 Hrs	20	80	100	4
IV	20UAKSP610	Skill based Course 4 (Lab) : Software Testing Lab	3	P	3 Hrs	30	45	75	3
V	20NS01/ 20NC01/ 20PE01/ 20YR01	Extension Activities $	-		-	50	-	50	1
		Total	**30**					**625**	**24**
		TOTAL	**180**					**3600**	**140**

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LIST OF ALLIED COURSES			
Allied 1	20UAKAT104		Numerical and Statistical Methods
Allied 2	20UAKAT204		Discrete Mathematics
Allied 3	20UAKAT304		Computer Based Optimization Techniques
Allied 4	20UAKAT404		Business Accounting
LIST OF SKILL BASED COURSES			
Skill Based Course 1	20UAKSP305		Multimedia Lab
Skill Based Course 2	20UAKSP405		User Interface Design Lab using FOSS
Skill Based Course 3	20UAKSP508		Networking Lab
Skill Based Course 4	20UAKSP610		Software Testing Lab
LIST OF ADVANCED LEARNERS COURSES			
Advanced Learners Course 1	20UAKAL407	A	Software Testing
	20UAKAL408	B	Software Project Management
Advanced Learners Course 2	20UAKAL509	A	Data Science
	20UAKAL510	B	Virtual Reality Technology
LIST OF ELECTIVE COURSES			
Elective - I	20UAKET505	A	Computer Graphics
	20UAKET506	B	Cloud Computing
	20UAKET507	C	Web Engineering
Elective - II	20UAKET603	A	Web Technology
	20UAKET604	B	Principles of Multimedia
	20UAKET605	C	Client/Server Computing
Elective - III	20UAKET606	A	Mobile Computing
	20UAKET607	B	Data Mining
	20UAKET608	C	Open Source Softwares

P.N.J

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B.Sc. COMPUTER SCIENCE

(For the candidates admitted during the academic year 2019 – 2020 and onwards)

SCHEME OF EXAMINATION – CBCS PATTERN

Part	Course Code	Course Title	Inst. Hrs /Week	T/P	Examination Details				Credits
					Duration in Hours.	CIA	ESE	Total Marks	
SEMESTER I									
I	17T01/17H01/ 17F01/17M01/ 17S01	Language – I	6	T	3 Hrs	25	75	100	4
II	17E01	English – I	6	T	3 Hrs	25	75	100	4
III	19UAKCT101*	Core 1: Programming in C	4	T	3 Hrs	25	75	100	4
III	17UAKCT102	Core 2: Digital Fundamentals and Computer Architecture	4	T	3 Hrs	25	75	100	4
III	19UAKCP103*	Core Lab 1: Programming Lab – C with Linux	3	P	3 Hrs	40	60	100	3
III	17UAKAT104	Allied 1: Numerical and Statistical Methods	5	T	3 Hrs	25	75	100	4
IV	17ES01	Foundation Course I: Environmental Studies	2	T	3 Hrs	-	50	50	2
		Total	**30**					**650**	**25**
SEMESTER II									
I	17T02/17H02/ 17F02/17M02/ 17S02	Language – II	6	T	3 Hrs	25	75	100	4
II	17E02	English – II	6	T	3 Hrs	25	75	100	4
III	19UAKCT201*	Core 3: Python Programming	4	T	3 Hrs	25	75	100	4
III	17UAKCT202	Core 4: Data Structures and Algorithms	4	T	3 Hrs	25	75	100	4
III	19UAKCP203*	Core Lab2 : Programming Lab- Python	3	P	3 Hrs	40	60	100	3
III	17UAKAT204	Allied 2: Discrete Mathematics	5	T	3 Hrs	25	75	100	4
IV	17VE01	Foundation Course II: Value Education	2	T	3 Hrs	-	50	50	2
		Total	**30**					**650**	**25**

*[The syllabi for the revised papers will be followed from the academic year 2019-2020 only and there is no change in the existing scheme of examination and syllabi of remaining papers]

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Part	Course Code	Course Title	Inst. Hrs/Week	T/P	Examination Details				Credits
					Duration in Hours.	CIA	ESE	Total Marks	
SEMESTER III									
III	19UAKCT301	Core 5: Operating Systems	6	T	3 Hrs	25	75	100	4
III	19UAKCT302	Core 6: Java Programming	6	T	3 Hrs	25	75	100	4
III	19UAKCP303	Core Lab 3: Programming Lab- Java	6	P	3 Hrs	40	60	100	4
III	19UAKAT304	Allied 3: Computer Based Optimization Techniques	6	T	3 Hrs	25	75	100	4
IV	19UAKSP305	Skill Based Course 1 (Lab): Multimedia Lab	4	P	3 Hrs	30	45	75	3
IV	17BT01/ 17AT01/ 19UAKNT306/ 19UAKNP307	Basic Tamil * / Advanced Tamil # (OR) Non-Major Elective - I : Internet Principles @ / Programming Lab- Office Automation and Applications @	2	T	3 Hrs	75		75	2
		Total	**30**					**550**	**21**
SEMESTER IV									
III	19UAKCT401	Core 7 : Software Engineering	6	T	3 Hrs	25	75	100	4
III	19UAKCT402	Core 8: Web Programming	6	T	3 Hrs	25	75	100	4
III	19UAKCP403	Core Lab 4: Web Programming Lab	6	P	3 Hrs	40	60	100	4
III	19UAKAT404	Allied-4: Business Accounting	6	T	3 Hrs	25	75	100	4
IV	19UAKSP405	Skill Based Course 2 (Lab): Software Development - CASE Tools Lab	4	P	3 Hrs	30	45	75	3
IV	17BT02/ 17AT02/ 19UAKNT406/ 19UAKNP409	Basic Tamil * /Advanced Tamil # (OR) Non-Major Elective - II : Information Security and Cyber Laws @ / Programming Lab- Web Development @	2	T	3 Hrs	75		75	2
		Total	**30**					**550**	**21**

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Part	Course code	Course Title	Inst. Hrs /Week	T/P	Examination Details				Credits
					Duration in Hours.	CIA	ESE	Total Marks	
SEMESTER V									
III	19UAKCT501	Core 9: Computer Networks	6	T	3 Hrs	25	75	100	5
III	19UAKCT502	Core 10: Visual Basic and VB.net	5	T	3 Hrs	25	75	100	4
III	19UAKCT503	Core 11: Relational Database Management System	5	T	3 Hrs	25	75	100	4
III	19UAKCP504	Core Lab 5: Programming Lab - Visual Basic, VB.net and Oracle	5	P	3 Hrs	40	60	100	4
III	19UAKET505/ 19UAKET506/ 19UAKET507	Elective - I :	6	T	3 Hrs	25	75	100	4
IV	19UAKSP508	Skill Based Course 3(Lab): Networking Lab	3	P	3 Hrs	30	45	75	3
		Total	**30**					**575**	**24**
SEMESTER VI									
III	19UAKCT601	Core 12: Internet of Things (IoT)	6	T	3 Hrs	25	75	100	4
III	19UAKCP602	Core Lab 6: Internet of Things (IoT) Lab	5	P	3 Hrs	40	60	100	4
III	19UAKET603/ 19UAKET604/ 19UAKET605	Elective - II :	6	T	3 Hrs	25	75	100	4
III	19UAKET606/ 19UAKET607/ 19UAKET608	Elective III :	6	T	3 Hrs	25	75	100	4
III	19UAKCV609	Project Work Lab :	4	P	3 Hrs	20	80	100	4
IV	19UAKSP610	Skill based Course 4 (Lab) : Software Testing Lab	3	P	3 Hrs	30	45	75	3
V	19NS01/ 19NC01/ 19PE01/ 19YR01	Extension Activities $	-		-	50	-	50	1
		Total	**30**					**625**	**24**
		TOTAL	**180**					**3600**	**140**

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LIST OF ALLIED COURSES			
Allied 1	17UAKAT104		Numerical and Statistical Methods
Allied 2	17UAKAT204		Discrete Mathematics
Allied 3	19UAKAT304		Computer Based Optimization Techniques
Allied 4	19UAKAT404		Business Accounting
LIST OF SKILL BASED COURSES			
Skill Based Course 1	19UAKSP305		Multimedia Lab
Skill Based Course 2	19UAKSP405		Software Development - CASE Tools Lab
Skill Based Course 3	19UAKSP508		Networking Lab
Skill Based Course 4	19UAKSP610		Software Testing Lab
LIST OF ADVANCED LEARNERS COURSES			
Advanced Learners Course 1	19UAKAL409	A	Software Testing
	19UAKAL408	B	UNIX Programming
Advanced Learners Course 2	19UAKAL509	A	Software Project Management
	19UAKAL510	B	Linux Programming
LIST OF ELECTIVE COURSES			
Elective - I	19UAKET505	A	Computer Graphics
	19UAKET506	B	Cloud Computing
	19UAKET507	C	Distributed Systems
Elective - II	19UAKET603	A	Web Technology
	19UAKET604	B	Mobile Computing
	19UAKET605	C	Principles of Multimedia
Elective - III	19UAKET606	A	Artificial Intelligence and Expert Systems
	19UAKET607	B	Data Mining
	19UAKET608	C	Cryptography and Network Security

P.RM

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Sem.	Course Code	Core 5 : Operating Systems	Total Marks:100		Hours Per Week	Credits
III	19UAKCT301		CIA :25	ESE :75	6	4

OBJECTIVE:

To enable the students learn the various aspects of the Operating Systems such as Process Management, Memory Management and I/O Management.

COURSE OUTCOMES:

At the end of the course, the students will able to

CO1: Understand the basic concepts of Process and its Transitions (Understand)

CO2: Identify and handles Deadlock in Multiprogramming Systems (Remember)

CO3: Analyze Virtual Storage Organization and Management Strategies (Analyze)

CO4: Classify different types of Processor Scheduling (Understand)

CO5: Acquire knowledge in Disk Performance Optimization and File Systems (Apply)

UNIT - I

Introduction to Operating Systems – What is an Operating System? History – Distributed Computing – Process Concepts: Definition of Process – Process States – Process State Transitions – Process Control Block – Operation on Processes – Interrupt Processing – Mutual Exclusion – Critical Sections.

UNIT - II

Deadlock: Introduction – Conditions for Deadlock – Major Areas of Deadlock Research – Deadlock Prevention – Deadlock Avoidance – Deadlock Detection and Recovery. Storage Management: Storage Organization – Storage Management – Storage Hierarchy – Storage Management Strategies – Contiguous versus Non-Contiguous Storage Allocation – Single User Contiguous Storage Allocation – Fixed Partition Multiprogramming – Variable Partition Multiprogramming.

UNIT - III

Virtual Storage Organization - Introduction – Paging: Basic Concepts – Segmentation. Virtual Storage Management: Virtual Storage Management Strategies – Page Replacement Strategies – Working Set – Demand Paging – Page Size.

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UNIT - IV

Processor Management Job and Processor Scheduling: Introduction- Scheduling Levels – Scheduling Objectives and Criteria – Preemptive versus Non preemptive Scheduling – Priorities – Deadline Scheduling – FIFO Scheduling – Round Robin Scheduling – SJF Scheduling – SRT Scheduling – HRN Scheduling – Multilevel Feedback Queues – Fair Share Scheduling.

UNIT - V

Disk Performance Optimization – Introduction – Operation of Moving head Disk Storage - Need for Disk Scheduling – Seek Optimization. File and Database Systems: Introduction –File System – Functions – Organization – Allocating and Freeing Space – File Descriptor– Access Control Matrix.

TEXT BOOK:

H.M.Deitel, "Operating Systems", Second Edition, Pearson Education Publication, 2003.

UNIT I: Chapter 1: Sections: 1.2 – 1.9, Chapter 3: Sections: 3.2 – 3.6, 3.8, Chapter 4: Sections: 4.4, 4.5

UNIT II: Chapter 6: Sections: 6.1, 6.5 – 6.10, Chapter 7: Sections: 7.2 – 7.9

UNIT III: Chapter 8: Sections: 8.1, 8.6, 8.7, Chapter 9: Sections: 9.2 – 9.3, 9.5, 9.7, 9.10

UNIT IV: Chapter 10: Sections: 10.1 – 10.5, 10.7 – 10.10, 10.12 – 10.16

UNIT V: Chapter 12: Sections: 12.1 – 12.3, 12.5, Chapter 13: Sections: 13.1 – 13.3, 13.6, 13.8 – 13.10

REFERENCE BOOKS:

1. Abraham Silberschatz Peter Baer Galvin Greg Gagne, "Operating System Principles", Seventh Edition, 2007.

2. William Stalings, "Operating Systems Internals and Design Principles", Seventh Edition, Pearson Education Publication, 2015.

3. D.M.Dhamdhere, "Operating Systems A Concept-Based Approach", Second Edition, Tata McGraw-Hill, 2006.

4. Pramod Chandra P.Bhatt, "An Introduction to Operating Systems Concepts and Practice", Second Edition, Prentice-Hall of India, 2007.

5. Charles Crowley, "Operating Systems A Design-Oriented Approach", Tata McGraw-Hill, 2007.

Question Paper Pattern					
Section A	10 x 1 = 10 Marks (Multiple Choice, Four options) Two questions from each unit	Section B	5 x 7 = 35 Marks (Either or choice) Two questions from each unit	Section C	3 x 10 = 30 Marks (Answer any three questions) One Question from each unit

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Sem.	Course Code	Core 6: Java Programming	Total Marks:100		Hours Per Week	Credits
III	19UAKCT302		CIA :25	ESE :75	6	4

OBJECTIVE:

To give basic knowledge of Object Oriented Programming paradigm and to impart the programming skills in Java along with Java Beans.

COURSE OUTCOMES:

At the end of the course, the students will able to

CO1: Recognize the basics of Java Environment, Java Statements and Operators and Expressions (Remember)

CO2: Demonstrate the concepts of Branching Statements, Looping Statements and Method Overloading (Understand)

CO3: Examine the concepts of Arrays, Interfaces and Packages (Apply)

CO4: Analyze the functions of Multithreading, Exceptions, Applets, Graphics Programming and Managing Files (Analyze)

CO5: Justify about Swing, Event Handling and Java Beans (Evaluate)

UNIT - I

Java Evolution: Java Features – How Java Differs from C and C++ – Java and Internet – Overview of Java Language: Simple Java Program – Java Program Structure – Java Tokens – Java Statements – Implementing a Java Program – Java Virtual Machine – Constants, Variables, Data Types – Operators and Expressions.

UNIT - II

Decision Making and Branching: Decision Making with if Statement – Simple if, if..Else, Nesting of if..Else, Else if Ladder, Switch Statement, ?: Operator – Decision Making and Looping: While, Do, For – Jumps in Loops – Labeled Loops – Classes, Objects and Methods: Defining a Class – Fields, Methods Declaration – Creating Objects – Accessing Class Members – Method Overloading – Inheritance – Overriding Methods – Visibility Control.

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UNIT - III

Arrays, Strings and Vectors: One-dimensional Arrays – Creating an Array – Two-dimensional Arrays – Strings–Vectors - Interfaces: Multiple Inheritance: Defining, Extending, Implementing Interfaces – Packages: Putting Classes Together: Java API Packages – Using System Packages – Naming Conventions – Creating, Accessing a Package.

UNIT - IV

Multithreaded Programming: Life Cycle of a Thread – Thread Priority – Managing Errors and Exceptions – Applet Programming: Preparing to Write Applets – Building Applet Code – Applet Life Cycle. Graphics Programming: The Graphics Class – Drawing Lines, Rectangles, Circles, Ellipses and Arcs – Managing Input / Output Files in Java: Concept of Streams – Stream Classes – Byte Stream, Character Stream Classes – I/O Exceptions – Creation of Files – Reading/Writing Characters.

UNIT - V

User Interface Components with Swing: Swing and the Model-View-Controller Design Pattern – Introduction to Layout Management. Event Handling: The Delegation Event Model: Events – Event Sources – Event Listeners – Event Classes: ActionEvent, AdustmentEvent, ComponentEvent and ContainerEvent Classes. Java Beans: Origin of Java Beans- Fundamentals.

TEXT BOOKS:

1. E. Balagurusamy, "Programming with Java–A Primer", Fourth Edition, TMH, 2011.

UNIT I: Chapter 2: Sections: 2.2 – 2.4 Chapter 3: Sections: 3.2, 3.5 – 3.7, 3.9 – 3.10
Chapter 4: Sections: 4.2 – 4.11 Chapter 5: Sections: 5.2 – 5.15

UNIT II: Chapter 6: Sections: 6.2 – 6.8 Chapter 7: Sections: 7.2 – 7.6
Chapter 8: Sections: 8.2 – 8.6, 8.8, 8.11, 8.12, 8.18

UNIT III: Chapter 9: Sections: 9.2 – 9.6 Chapter 10: Sections: 10.2 – 10.4
Chapter 11: Sections: 11.2 – 11.6

UNIT IV: Chapter 12: Sections: 12.5, 12.8 Chapter 13: Sections: 13.2 – 13.8
Chapter 14: Sections: 14.3 – 14.5 Chapter 15: Sections: 15.2 – 15.5
Chapter 16: Sections: 16.2 – 16.5, 16.9-16.11

2. Cay S. Horstmann, Gary Cornell, "Core Java Volume I – Fundamentals", Eighth Edition, Pearson Education-2011.

UNIT V: Chapter 9: Page No: 362 - 377

3. Herbert Schildt, "The Complete Reference Java 2", Fifth Edition, TMH, 2002.

UNIT V: Chapter 20: Page No: 654 – 661

4. Mitch Allen, John B. Harvie, "Hands on Java Beans", BPB Publications, 2000.

UNIT V: Chapter 1: Page No: 1 – 6 UNIT V: Chapter 2: Page No: 7 – 15

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REFERENCE BOOKS:

1. Hebert Schildt, "The Complete Reference JAVA", Seventh Edition, TMH, 2011.

2. Patrick Naughton, "The Java Handbook", TMH, 2011.

3. C.Muthu, "Programming with Java", Second Edition, Vijay Nicole Imprints Private Limited, 2008.

4. John R. Hubbard, "Programming with JAVA –Schaums Outlines", Second Edition, TMH, 2004.

5. Cay S. Horstmann, Gary Cornell, "Core Java 2 Volume II–Advanced Features", Seventh Edition, Pearson Education-2008.

Question Paper Pattern					
Section A	10 x 1 = 10 Marks (Multiple Choice, Four options) Two questions from each unit	**Section B**	5 x 7 = 35 Marks (Either or choice) Two questions from each unit	**Section C**	3 x 10 = 30 Marks (Answer any three questions) One Question from each unit

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Sem.	Course Code	Core Lab 3: Programming Lab - Java	Total Marks:100		Hours Per Week	Credits
III	19UAKCP303		CIA :40	ESE :60	6	4

OBJECTIVES:

- To inculcate knowledge on object oriented programming concepts.
- To learn the concepts of Applets, Exception Handling, Packages, Swing and Java Beans.

COURSE OUTCOMES:

At the end of the course, the students will able to

CO1: Describe the concepts of Method Overloading, Multiple Inheritance and write the algorithm in well-written modular code (Remember)

CO2: Demonstrate the use of object oriented concepts like Package and Multithreading (Understand)

CO3: Develop the Exception Handling and Applet Programs (Apply)

CO4: Analyze the concepts of Files and Swing (Analyze)

CO5: Determine the idea of Swing and NetBeans (Evaluate)

PRACTICAL LIST

1. Write a Java Program to find the Area of Square, Rectangle and Circle using Method Overloading.
2. Write a Java Program to implement the concept of Multiple Inheritance using Interfaces.
3. Create a package called—Arithmetic that contains methods to deal with all arithmetic operations. Also, write a program to use the package.
4. Write a Java Program to implement the concept of Multithreading.
5. Write a Java Program to implement the concept of Exception Handling.
6. Write a Java Program to display a clock using Applet.
7. Write a Java Program to copy characters from one file to another file.
8. Write a Java Program to draw several shapes in the created windows using Swing.
9. Write a Java Program to draw a human face using Swing.
10. Write a Java Program to build a Simple Calculator using NetBeans.

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Sem.	Course Code	Skill Based Course 1 (Lab):	Total Marks:75		Hours Per Week	Credits
III	19UAKSP305	Multimedia Lab	CIA :30	ESE :45	4	3

OBJECTIVE:

To implement the various designing and animation techniques of multimedia.

COURSE OUTCOMES:

At the end of the course, the students will be able to

CO1: Classify the controls of Multimedia software (Understand)

CO2: Apply the designing skills upon Multimedia (Apply)

CO3: Demonstrate various effects of Multimedia (Apply)

CO4: Animate the figures using Multimedia tools (Create)

CO5: Model the experiments with a Movie making tool (Create)

PRACTICAL LIST

1. Design a logo for your own Company.
2. Design a Banner for an event of your College.
3. Create a Movie to represent the growing Moon.
4. Create an Animation to display the background image through your name using the Masking tool.
5. Animate a Ball using Motion Guide
6. Create a Stick Figure Animation.
7. Create a Flash Animation using Button Script.
8. Create an audio advertisement for a product.
9. Create a video tutorial for a concept.
10. Create a Social Awareness Movie with background music using Movie Maker Software Tool.

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Sem.	Course Code	Non-Major Elective - I:	Total Marks:75		Hours Per Week	Credits
III	19UAKNT306	Internet Principles	CIA :-	ESE :75	2	2

OBJECTIVE:

To enable the Students understand the Basic Terminologies and Concepts of the Internet.

COURSE OUTCOMES:

At the end of the course, the students willable to

CO1: Understand the basics of Internet (Understand)

CO2: Discuss Create, sending and Receiving mails (Understand)

CO3: Acquire knowledge in the basics of internet and its function (Apply)

CO4: Recognize the IP address and Domain name (Remember)

CO5: Compare the different types of Protocols (Analyze)

UNIT - I

Basics of Internet: Introduction – What is Internet – Evolution of Internet – Using the Internet - Search Engines-Mailing List.

UNIT- II

E-Mail Basics: E-Mail Addresses - Sending Mail - Sending Copies of a Message - Reading Mail - Replying to a Message - Forwarding and Bouncing Mail.

UNIT- III

World Wide Web (WWW): Introduction – Web page - Netsurfing. Browsers: Introduction- Internet Explorer - Netscape Navigator - Lynx.

UNIT- IV

Internet Addressing: Introduction - What is Internet Addressing - IP Address - Domain Name - Pseudo – Internet Addresses – Signature - Uniform Resource Locator (URL).

UNIT- V

Internet Protocols: Transmission Control Protocol / Internet Protocol (TCP/IP) - File Transfer Protocol (FTP) - Hyper Text Transfer Protocol (HTTP) – Telnet – Gopher – Pseudo – Internet addresses - Signatures.

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TEXT BOOKS:

1. Harley Hahn–The Internet Complete Reference - Second Edition - Tata Mc-GRAW-HILL Publication-2006 *(Unit I and Unit II)*

2. Alexis Leon, Mathews Leon–Internet for Everyone- First Edition - Vikas Publishing House Pvt Ltd 1998*(Unit III, Unit IV and Unit V)*

REFERENCE BOOKS:

1. Bennett Falk–TheInternetBasicReferencefromAtoZ–SecondEdition-BPBPublications-1996.

2. Christian Crumlish - The Internet NoExperienceRequired-SecondEdition-BPBPublications-1999

3. Joshua Eddings - How the Internet Works-Ziff Davis Press-1999

4. Marcus Goncalves, Arthur Donker, Kathryn Toyer, Matthew Willis, Kitty Niles, AnneHart and Jon-Paul Harkin-Internet Privacy Kit - Que Corporation -1997

5. NIIT - Internetworking Infrastructure and Operations – Second Edition – Prentice – Hall of India (P) Ltd - 2004.

Question Paper Pattern
SECTION–A
Five Questions
(Either or Choice)
Two Questions from each unit
(5 x 15 = 75 Marks)

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Sem	Course Code	Non-Major Elective-I: Programming Lab- Office Automation and Applications	Total Marks :75		Hours Per Week	Credits
III	19UAKNP307		CIA : --	ESE : 75	2	2

Objective:

To make the students understand the applications of Office Automation.

Course Outcomes:

At the end of the course, the students will able to

CO1: Identify the real time usage of Office Automation Tools (Remember)

CO2: Characterize the designing and aligning options of a Text Editor (Understand)

CO3: Acquire the practical knowledge on Office Automation Tools (Apply)

CO4: Correlate the office applications to the Tamil related themes (Analyze)

CO5: Assemble the appropriate office automation options to the real time scenarios (Create)

PRACTICAL LIST

1. Create, Save and Open a MS-Word document with a 'Bharathiar Poem' (any 1) in Tamil. Use Word Art for the title.

2. Perform alignment changes in MS-Word with 'Thirukkural' poems (any 10). Use Bullets and Numbering.

3. Prepare a Stock Report of a Tamil book shelf (minimum 15 books) in our college library using MS-Excel.

4. Prepare a graph that depicts the population of Tamilnadu for the past five decades with range values using MS-Excel.

5. Prepare a MS-Power Point presentation with the pictures of renowned Tamil poets (minimum 10 slides) with their names in Tamil font.

6. Prepare a MS-Power Point presentation with English-Tamil translation of most commonly used interesting words. (minimum 15 slides). Use textured backgrounds.

7. Prepare a self-running MS-Power Point presentation that depict the scenes of 'Silappadhikaram' (minimum 10 slides). Use Animation effects.

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Sem.	Course Code	Core 7 : Software Engineering	Total Marks:100		Hours Per Week	Credits
IV	19UAKCT401		CIA :25	ESE :75	6	4

OBJECTIVE:

To impart knowledge on Software Engineering Practice, Process Models, Design Engineering, Software Project Management and Software Testing.

COURSE OUTCOMES:

On successful completion of the course the students will be able to

CO1: Characterize various software process models (Analyze)

CO2: List out the elements of analysis model, data model and functional model (Remember)

CO3: Estimate the software projects and models (Evaluate)

CO4: Construct modular and interface design (Apply)

CO5: Test the created software using different testing strategies (Evaluate)

UNIT – I

Introduction –Software Engineering Technology – Software process – Software process models – The Linear Sequential – prototyping – RAD Model- Evolutionary Software Process Models – Component-Based Development.

UNIT – II

Requirement Engineering - System modeling – Requirements analysis and elicitation for software - software prototyping - data dictionary – elements of analysis model – data modeling – functional modeling and information flow– Behavioral Modeling –The mechanics of structured Analysis.

UNIT – III

Software Project Planning – Software Scope – Resources – Software Project Estimation – Decomposition Techniques: Software Sizing – Problem-Based – Process-Based estimation- Empirical Estimation Models – Automated Estimation Tools.

UNIT – IV

The system design process – software design and software engineering – The design process – Design principles – Design concepts – Effective modular design – Design heuristics for effective modularity - User interface Design

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UNIT – V

Software testing techniques – Software testing fundamentals – White box testing – Basis path testing – Control Structure testing – Black box testing. Software testing strategies – A strategic approach to s/w testing – Validation testing – System testing – The Art of debugging

TEXT BOOKS:

1. Roger S. Pressman: Software Engineering, Tata McGraw Hill Publication Company Pvt. Ltd., V Edition.

UNIT I	:	Chapter 2	: Sections 2.1 – 2.8
UNIT II	:	Chapter 11 & 12	: Sections 11.1, 11.2, 11.4, 12.2 - 12.7
UNIT III	:	Chapter 5	: Sections 5.3- 5.5, 5.6.1, 5.6.2, 5.6.4, 5.7, 5.9
UNIT IV	:	Chapter 13 & 15	: Sections 13.1 -13.6, 15.2
UNIT V	:	Chapter 17 & 18	: Sections 17.1, 17.3 - 17.6, 18.1, 18.5 - 18.7

REFERENCE BOOKS:

1. Watts S Humbhrey: A Discipline for Software Engineering, Pearson education Publ., 2001.

2. Bob Hughes and Mike Cotterell "Software Project Management"2nd edition, Tata McGraw Hill Publishing Company Ltd., New Delhi, 2002.

3. Gopalaswamy Ramesh, "Managing Globle Software Projects" Tata McGraw Hill Publishing Company Ltd, New Delhi, 2002.

QUESTION PAPER PATTERN		
SECTION – A	**SECTION – B**	**SECTION – C**
10 x 1= 10 Marks (Multiple choice, Four options) Two questions from each unit	5 x 7 = 35 Marks (Either or choice) Two questions from each unit	3 x 10 = 30 Marks (Answer any three questions) One question from each unit

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Sem.	Course Code	Core 8: Web Programming	Total Marks:100		Hours Per Week	Credits
IV	19UAKCT402		CIA :25	ESE :75	6	4

OBJECTIVE:

To understand and practice web development techniques and acquire knowledge and skills for creation of webpages.

COURSE OUTCOMES:

At the end of the course, the students will able to

CO1: Classify the various HTML tags (Understand)

CO2: Apply the various cascading style sheets for designing the web pages (Apply)

CO3: Create basic action script coding (Create)

CO4: Acquire knowledge about open sources languages (Apply)

CO5: Understand how server-side programming works on the web (Understand)

UNIT - I

Introduction to HTML: A Brief History – HTML Tags – HTML Documents – Header Section –Body Section – Headings – Link Documents using Anchor Tag – Formatting Characters – Font Tag – Images and Pictures – Listing – Tables in HTML.

UNIT - II

DHTML and Style Sheets: Defining Styles – Elements of Styles – Linking a Style Sheet to an HTML Document – In-line Styles – External Style Sheets – Internal Style Sheets – Multiple Styles – Frames: Frameset Definition – Frame Definition – Nested Frame sets – Forms: Action Attribute – Method Attribute – Enctype Attribute – Drop Down List.

UNIT - III

Introduction to Java Script: Java Script in web pages – JavaScript – Writing Java Script into HTML – Basic Programming Techniques – Operators and Expressions in Java Script – JavaScript Programming Constructs – Conditional Checking – Super Controlled – Endless Loops –Functions in Java Script – User Defined Functions – Placing Text in a Browser – Dialog Boxes. Forms used by a website: The Form object – Other Built-in objects in JavaScript – User Defined Objects.

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UNIT - IV

PHP Basics: Introduction – Identifiers – Variables – Constants – Data Types –Operators– Statements – PHP Loops.

UNIT - V

PERL: Introduction – Advantages and Working Environment of PERL – Variables – Strings – Statements – Subroutines – Files – Packages and Modules – Object - Oriented PERL.

TEXT BOOKS:

1. C.Xavier – Web Technology & Design – First Edition – New Age International Publishers – Reprint 2008.

UNIT I – Chapter 2

2.C.Xavier – World Wide Web design with HTML – Tata McGraw Hill Publication – Eighteenth Reprint 2008.

UNIT II – Chapter 9, 10 &12

3. Ivan Bayross – Web Enabled Commercial Applications Development Using HTML, Java Script, DHTML and PHP – BPB Publications– 4th Revised Edition.

UNIT III – Chapter 8, 10

4. M.N.Rao – Fundamentals of Open Source Software – PHI Publication–2015.

UNIT IV – Chapter 4; UNIT V – Chapter 9

BOOKSFOR REFERENCE:

1.RajKamal – Internet and Web Technologies – First Edition – Tata McGraw Hill Publication–2002.

2.Thomas A Powell – Web Design: The Complete Reference–Second Edition–Tata McGraw Hill Publication–2003.

3.Rasmus Lerdorf, Kevin Tatroe and Peter MacIntyre – Programming PHP – Second Edition– Shroff Publication – July2009.

4. R. N. Srivastava– Web Technology– Global Academic Publication – First Edition 2011.

5. Vikas Gupta– Multimedia and Web Design– Dream tech Publication– Reprint2008.

QUESTION PAPER PATTERN		
SECTION – A	SECTION – B	SECTION – C
10 x 1= 10 Marks (Multiple choice, Four options) Two questions from each unit	5 x 7= 35 Marks (Either or choice) Two questions from each unit	3 x 10 = 30 Marks (Answer any three questions) One question from each unit

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Sem.	Course Code	Skill Based Course 2 (Lab):	Total Marks:75		Hours Per Week	Credits
IV	19UAKSP405	Software Development - CASE Tools Lab	CIA :30	ESE :45	4	3

OBJECTIVE:

To make the students understand the application of CASE Tools.

COURSE OUTCOMES:

At the end of the course, the students willable to

CO1: Identify various objects and the relationship between them in the given projects (Remember)

CO2: Recognize the actors and use cases in the projects (Remember)

CO3: Design projects using Object Oriented concepts (Create)

CO4: Use the UML analysis and design diagrams (Apply)

CO5: Blueprint appropriate design patterns (Analyze)

PRACTICAL LIST

1. Create a UML model for Online Purchase System.
2. Create a UML model for Library Management System.
3. Create a UML model for E-Ticketing for Railway Reservation.
4. Create a UML model for ATM System.
5. Create a UML model for Student Mark Analyzing System.
6. Create a UML model for Foreign Trading System.
7. Create a UML model for Passport Automation System.
8. Create a UML model for Quiz System.
9. Create a UML model for Employee Payroll system.
10. Create a UML model for a Course Registration System.

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Sem.	Course Code	Non-Major Elective II: Information Security and Cyber Laws	Total Marks:75		Hours Per Week	Credits
IV	19UAKNT406		CIA :-	ESE :75	2	2

OBJECTIVE:

To enable the Students learn the basics of information security and gain the knowledge about all the aspects of Cyber laws and Cryptography.

COURSE OUTCOMES:

At the end of the course, the students will able to

CO1: Understand the basics of Information Technology (Understand)

CO2: Classify all types of crimes related to electronic records (Understand)

CO3: Use authentication technology in case of digital signatures (Apply)

CO4: Recognize Cyber laws and Security Policies and Cryptography (Remember)

CO5: Identify the different sections in Information Technology Act, 2000 (Remember)

UNIT- I

Introduction–Computer: Evolution, Generation, Types, Major Components, Characteristics and Limitations-Information Technology.

UNIT – II

Cyber Space: Salient Features of Cyber Space – Netizen – Cyber Crime - Malware or malicious Computer Codes - Network and Network Security.

UNIT – III

Cryptography – Encryption Technique and Algorithm and Digital Signature – Electronic Signature.

UNIT - IV

Cyber Laws - Components of Cyber Law - Indian Position - Amendment of some conventional laws - Wider Interpretation of other conventional laws.

UNIT – V

Cyber Law in India: An overview of Information Technology Act 2000.

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TEXT BOOK:

Dr. Jyoti Rattan - Cyber Laws & Information Technology-Sixth Edition, Bharat Law House Private Ltd., New Delhi, 2017.

UNIT I: Chapter 1: Section 1.1 – 1.3

UNIT II: Chapter 1: Section 1.4 – 1.5, Chapter 3, Chapter 4: Section 4.1- 4.2

UNIT III: Chapter 7

UNIT IV: Chapter 5: Section 5.1 – 5.3

UNIT V: Chapter 6

REFERENCEBOOKS:

1.Angur Shree Aggarwal, Sanjeev Kumar Sharma, Anuradha Tyagi, Shalu Goel- Information Security and Cyber Laws-First Edition, Vayu Education of India,New Delhi, 2011.

2. Richard E. Smith - Internet Cryptography – Pearson Education Private Ltd., 2013.

3. Neal Krawetz – Introduction to Network Security – Baba Barkha Nath Printers, New Delhi, 2007.

4. C K Shyamala, N.Harini, Dr T R Padmanabhan, Cryptography and Security-First Edition, Wiley India Private Ltd., New Delhi, 2011.

5. Atul Kahate- Crytography and Network Security-Second Edition, Tata McGraw–Hill Publishing Company Limited, New Delhi, 2008.

Question Paper Pattern
SECTION–A
Five Questions
(Either or Choice)
Two Questions from each unit
(5 x 15 = 75 Marks)

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Sem	Course Code	Non-Major Elective-II: Programming Lab- Web Development	Total Marks :75		Hours Per Week	Credits
IV	19UAKNP407		CIA : --	ESE : 75	2	2

Objective:

To make the students learn the basic components of Web Development.

Course Outcomes:

At the end of the course, the students will able to

CO1: Enumerate the real time usage of Hyper Text Markup Language-HTML (Remember)

CO2: Differentiate the various components of a web page (Understand)

CO3: Attain the practical knowledge on web page development tools (Apply)

CO4: Correlate the web applications to the Tamil related themes (Analyze)

CO5: Develop the linked web pages with relevant options to the real time scenarios (Create)

PRACTICAL LIST

1. Create a basic HTML document with color background and various font sizes for Tamil Novel names (minimum 10).

2. Create a static web page with theme of 'Sundarakandam in Kambaramayanam' in HTML.

3. Create a web page with the names of Tamil Short Stories and their authors using list tags in HTML.

4. Create a web page by including the image of 'Tanjore Big Temple' and give a meaningful description using <p> tag in HTML.

5. Create a web page that contains the chart with five geographical 'Thinais' of Tamil people and their details using <table> tag in HTML.

6. Create web page with the texts named 'Iyal', 'Isai' and 'Nadagam' hyperlinked to the web pages with the description of those texts using HTML.

7. Create a participant registration web page for a Tamil elocution competition using simple HTML form objects.

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Sem.	Course Code	Advanced Learners Course 1 (A): Software Testing	Total Marks:100		Hours Per Week	Credits
IV	19UAKAL409		CIA :-	ESE :100	-	2

OBJECTIVE:

To inculcate knowledge on Software testing concepts.

COURSE OUTCOMES:

At the end of the course, the students willable to

CO1: Understand the basics of Software Testing (Understand)

CO2: Discuss Challenges in Testing (Understand)

CO3: Acquire knowledge in the Functional and Non Functional Testing (Apply)

CO4: Apply different types of Testing (Apply)

CO5: Study the concepts of Testing Object Oriented Systems, Test Planning, Test Metrics and Measurements (Remember)

UNIT- I

Software Development Life Cycle models: Phases of Software project – Quality, Quality Assurance, Quality control – Testing, Verification and Validation – Process Model to represent Different Phases - Life Cycle models. White-Box Testing: Static Testing – Structural Testing–Challenges in White-Box Testing

UNIT- II

Black-Box Testing: What is Black-Box Testing? - Why Black-Box Testing? – When to do Black-Box Testing? – How to do Black-Box Testing? – Challenges in White Box Testing - Integration Testing: Integration Testing as Type of Testing – Integration Testing as a Phase of Testing– Scenario Testing – Defect Bash.

UNIT- III

System and Acceptance Testing: system Testing Overview–Why System testing is done? – Functional versus Non-functional Testing – Functional testing - Non-functional Testing – Acceptance Testing – Summary of Testing Phases.

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UNIT- IV

Performance Testing: Factors governing Performance Testing – Methodology of Performance Testing – tools for Performance Testing–Process for Performance Testing – Challenges. Regression Testing: What is Regression Testing? – Types of Regression Testing – When to Do Regression Testing – How to do Regression Testing – Best Practices in Regression Testing.

UNIT- V

Testing of Object-Oriented Systems: Introduction-Primer on Object-Oriented Software-Differences in OO Testing - Usability and Accessibility Testing: Approach to Usability-Quality factors for usability - Accessibility Testing.

Test Planning, Management, Execution and Reporting: Test Planning – Test Management – Test Process – Test Reporting – Best Practices. Test Metrics and Measurements: Project Metrics – Progress Metrics – Productivity Metrics – Release Metrics

TEXT BOOK:

Software Testing Principles and Practices, Srinivasan Desikan & Gopalswamy Ramesh, 2006, Pearson Education

(UNIT -I: 2.1 -2.5, 3.1 -3.4, UNIT -II: 4.1 -4.4, 5.1-5.5, UNIT -III: 6.1-6.7,

UNIT -IV: 7.1-7.6, 8.1-8.5, UNIT -V: 11.1 -11.3, 12.2, 12.5, 12.7, 15.1-15.6, 17.4 -17.7)

REFERENCEBOOKS:

1. Effective Methods for Software Testing, William E. Perry, Second edition, Wiley Computer Publishing John Wiley&Sons,Inc,2000.

2. Software Testing Effective Methods, Tools and Techniques Renu Rajani, Pradeep Oak, 2008, TMH.

3. Software Testing Techniques, Boris Beizer, 2004, Himal Impressions, Delhi

4. SoftwareTesting Concepts and Tools,Nageswara RaoPusuluri,2008,Himal Impressions, Delhi

5. The Art of Software Testing, Second Edition, Glenford J. Myers, 2008, Kanakenterprise, Ghaziabad, UP

QUESTION PAPER PATTERN		
SECTION – A	SECTION – B	SECTION – C
10 x 2 = 20 Marks (Answer any 10 questions out of 12)	5 x 7 = 35 Marks (Either or choice) Two questions from each unit	3 x 15 = 45 Marks (Answer any three questions) One question from each unit

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Sem.	Course Code	Advanced Learners Course 1 (B): UNIX Programming	Total Marks:100		Hours Per Week	Credits
IV	19UAKAL408		CIA :-	ESE :100	-	2

OBJECTIVE:

To enable the Students to learn the various aspects of the UNIX Operating Systems such as Process Management, Threads, Signals, Synchronization and File System.

COURSE OUTCOMES:

At the end of the course, the students will able to

CO1: Understand the basic set of commands and utilities in UNIX systems (Understand)

CO2: Understand the mechanisms of UNIX Operating System to handle processes and threads and their communication (Understand)

CO3: Use the system calls provided in the UNIX environment (Apply)

CO4: Recognize CPU Scheduling, Synchronization, and Inter process Communication (Remember)

CO5: Identify the UNIX utilities to create and manage simple file processing operations, organize directory structures with appropriate security (Remember)

UNIT - I

Introduction - A Brief History - The Beginning - The Process and the Kernel: Introduction-Mode, Space, and Context - The Process Abstraction: Process State - Process Context - User Credentials - The u Area and the proc Structure - Executing in Kernel Mode: The System call Interface - Interrupt Handling- Synchronization: Blocking Operations - Interrupts- Multiprocessors - Process Scheduling – Signals - New Processes and Programs.

UNIT - II

Threads and Lightweight Processes: Introduction: Motivation - Multiple Threads and Processors- Concurrency and Parallelism-Fundamental Abstractions: Kernel Threads - Lightweight Processes - User Threads - Lightweight Process Design - Issues to Consider: Semantics of fork -Other System Calls - Signal Delivery and Handling – Visibility - Stack Growth - User Level Threads Libraries - Scheduler Activations.

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UNIT - III

Signals and Session Management: Introduction - Signal Generation and Handling: Signal Handling - Signal Generation - Typical Scenarios - Sleep and Signals - Unreliable Signals-Reliable Signals: Primary Features - The SVR3 Implementation - BSD Signal Management - Signals in SVR4 – Siganls Implementation – Exceptions - Mach Exception Handling: Exception Ports - Error Handling - Debugger Interactions - Analysis.

UNIT - IV

Process Scheduling: Introduction - Clock Interrupt Handling: Callouts – Alarms - Scheduler Goals - Traditional UNIX Scheduling: Process Priorities - Scheduler Implementation - Run Queue Manipulation – Analysis - Inter Process Communications: Universal IPC Facilities – Signals – Pipes - SVR4 Pipes - Process Tracing - Messages: Message Data Structures - Message Passing Interface - Ports: The Port Name Space - The Port Data Structure - Port Translations.

UNIT - V

Synchronization and Multiprocessing: Introduction - Synchronization in Traditional UNIX Kernels: Interrupt Masking-Sleep and Wakeup - Limitations of Traditional Approach - Multiprocessor Systems: Memory Model - Synchronization Support - Software Architecture- Semaphores - File System Interface and Framework: The User Interface to Files: Files and Directories - File Attributes- File Descriptors - File I/O - Scatter-Gather I/O-File Locking - File Systems - Logical Disks - Special Files.

TEXT BOOK:

Uresh Vahalia, "UNIX Internals The New Frontiers", Pearson Education, 2008.

UNIT I: Chapter 1: Section 1.1 – 1.1.1, 1.1.2, Chapter 2: Section 2.1 - 2.8

UNIT II: Chapter 3: Section 3.1 – 3.5

UNIT III: Chapter 4: Section 4.1 – 4.8

UNIT IV: Chapter 5: Section 5.1 – 5.4, Chapter 6: Section 6.2, 6.5, 6.6

UNIT V: Chapter 7: Section 7.1 - 7.3, 7.5, Chapter 8: Section 8.2 - 8.4

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REFERENCE BOOKS:

1. Brian W.Kernighan Rob Pike,"The UNIX Programming Environment", PHI Learning Private Limited, 2014.

2. N.B.Venkateswarlu, "Advanced UNIX Programming", BS Publications, 2005.

3. Sumitabha Das, "UNIX Concepts and Applications", Fourth Edition, Tata McGraw-Hill, 2010.

4. Paul Love, Joe Merlino, Jeremy C. Reed, Craig Zimmerman, Paul Weinstein, "Beginning UNIX", First Edition, Wiley Publishing Inc., USA, 2005.

5. K.Srirengan, "Understanding UNIX", PHI Prentice-Hall India, 2006.

QUESTION PAPER PATTERN		
SECTION – A	**SECTION – B**	**SECTION – C**
10 x 2 = 20 Marks (Answer any 10 questions out of 12)	5 x 7 = 35 Marks (Either or choice) Two questions from each unit	3 x 15 = 45 Marks (Answer any three questions) One question from each unit

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Sem.	Course Code	Core 9: Computer Networks	Total Marks: 100		Hours Per Week	Credits
V	20UAKCT501		CIA: 25	ESE: 75	6	5

OBJECTIVE:

To inculcate knowledge on different networking concepts like Layers, Protocols, Wireless Concepts, Cryptography and Network Security.

COURSE OUTCOMES:

On successful completion of the course the students will able to:

CO1: Understand the basic Networking concepts and Reference Models (Understand)

CO2: Identify different types of Transmission Media for Networking (Remember)

CO3: Analyze Data link layer Protocols and Medium Access Control Sub layer (Analyze)

CO4: Compare different types of Routing Algorithms and Congestion Control Algorithms (Analyze)

CO5: Acquire knowledge on Application layer and use of Network Security (Apply)

UNIT - I

Network Hardware: Introduction-Local Area Networks-Metropolitan Area Networks - Wide Area Networks - Internetworks. Network Software: Introduction - Protocol Hierarchies - Design Issues for the Layers - Connection-OrientedVersusConnectionless Services - Service Primitives - The Relationship of Services to Protocols. Reference Models: OSI Reference Model - TCP/IP Reference Model - Comparison of OSI and TCP/IP.

UNIT – II

PHYSICAL LAYER: Introduction-Guided Transmission Media: Magnetic Media - Twisted Pair - Coaxial Cable - Fiber Optics. Wireless Transmission: Electromagnetic Spectrum - Radio Transmission - Microwave Transmission - Infrared Transmission - Light Transmission. Communication Satellites: Geostationary, Medium-Earth Orbit, Low Earth-Orbit Satellites.

UNIT - III

DATA LINK LAYER: Introduction - Data Link Layer Design Issues - Error Detection and Correction - Elementary Data Link Protocols - Sliding Window Protocols: A One-Bit Sliding Window Protocol. MEDIUM-ACCESS CONTROL SUBLAYER: The Channel Allocation Problem - Multiple Access Protocols:

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ALOHA - Carrier Sense Multiple Access Protocols - Collision Free Protocols - Bluetooth: Architecture – Applications – The Bluetooth Radio Layer.

UNIT - IV

NETWORK LAYER: Introduction - Routing Algorithms: The Optimality Principle - Shortest Path - Flooding -Distance Vector - Link State - Hierarchical Routing – Congestion Control Algorithms: Approaches - Traffic Aware Routing. TRANSPORT LAYER: Introduction - Elements of Transport Protocols: Connection Establishment – Connection Release - Internet Transport Protocols: TCP - Introduction to TCP - Service Model - TCP Protocol - Segment Header - TCP Connection Establishment and Release.

UNIT – V

APPLICATION LAYER: Introduction – DNS: The DNS Name Space - Electronic Mail. NETWORK SECURITY: Cryptography: Introduction-Substitution Ciphers-Transposition Ciphers - Symmetric Key Algorithms - Public Key Algorithms - Digital Signatures: Symmetric and Public Key Signatures.

TEXT BOOK:

Andrew S. Tanenbaum, David J. Wetherall, "Computer Networks", Fifth Edition, Pearson Education, 2013.

REFERENCE BOOKS:

1. James F. Kurose, Keith W.Ross, "Computer Networking A Top-Down Approach" Fifth Edition, Pearson Education,
2. Achyut Godbole,"Data Communication and Networks", Tata McGraw Hill Publications,2007
3. Larry L.Peterson ,BruceS.Davie, "Computer Networks", Fourth Edition, Elsevier Inc.2007.
4. Uyless Black,"Computer Networks Protocols, Standards and Interfaces", Second Edition,PHI, 1993.
5. William Stallings, "Cryptography and Network Security", Third Edition, Pearson Education, 2006.

Question Paper Pattern					
Section A	10 x 1 = 10 Marks (Multiple Choice, Four options) Two questions from each unit	Section B	5 x 7 = 35 Marks (Either or choice) Two questions from each unit	Section C	3 x 10 = 30 Marks (Answer any three questions) One question from each unit

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Sem.	Course Code	Core 10 : Visual Programming – Visual Basic	Total Marks: 100		Hours Per Week	Credits
V	20UAKCT502		CIA: 25	ESE: 75	5	4

OBJECTIVE:

To learn the concept of Event Driven Programming and to create software interface and codes using Graphical environment.

COURSE OUTCOMES:

At the end of the course, the students will be able to

CO1: Understand the concept of data- driven program execution flow control in Visual Basic programming. (Understand)

CO2: Differentiate between various Branching and Looping statements in VB. (Understand)

CO3: Acquire detail knowledge about VB controls. (Apply)

CO4: Create menus and develop procedures. (Create)

CO5: Generate the crystal reports using VB. (Create)

UNIT - I

Visual Basic: Introduction - What is Visual Basic –Event and Event Procedures–Object Related Concepts– Visual Basic Program Development Process- Required Computer skills – Logical Program Organization–Visual Basic Program Components–Visual Basic Environment–Opening, Saving and Running a Visual Basic Project –Getting Help–A sample Visual Basic Project–Visual Basic Fundamentals: Constants– Numeric and String-Variables–Data Types and Data Declarations.

UNIT – II

Operators and Expressions–Hierarchy of Operations–Inserting Parentheses–Special rules concerning Numeric Expressions – String Expressions–Assigning Values to Variables–Displaying Output–The Print Statement–Library Functions–Program Comments. Branching and Looping: Relational operators and Logical Expressions–Logical Operators– Branching with If-Then, If-Then-Else blocks– Selection: Select Case–Looping with For-Next, Do-Loop, While-Wend – Stop statement.

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UNIT - III

Visual Basic Control Fundamentals: VB Control tools–Control tool Categories–Working with Controls–Naming Forms and Controls–Assigning Property values to Forms and Controls– Executing commands–Displaying Output Data–Entering Input Data–Selecting Multiple Features, Selecting Exclusive Alternatives, Selecting from a List–Assigning Properties collectively–Generating Error Messages–Creating Timed Events– Scroll Bars.

UNIT - IV

Menus and Dialog Boxes: Building Drop-DownMenus–AccessingaMenufromtheKeyboard–MenuEnhancements–Submenus – Pop-Up Menus – Dialog Boxes– More about the MsgBox Function– The Input Box Function. Executing and Debugging New Project: Error Handlers. Procedures: Modules and Procedures – Sub Procedures – Event Procedures – Function Procedures–Scope–Optional Arguments.

UNIT - V

Arrays: Array Characteristics, Declarations– Processing Array Elements–Passing Arrays to Procedures–Dynamic Arrays–Array-related Functions–Control Arrays – Looping with FOR Each Next. Data Files: Data File Characteristics–Accessing and Saving a File in VB The Common Dialog Control–Processing a Data File–Sequential Data Files–Creating, Appending &Modifying a sequential Data File – Random Access Data Files – Creating ,Reading & Update – Binary Files – Creating reports using Crystal Reports .

TEXTBOOK:

Byron S.Gottfried, Ph.D., "SCHAUM"S Outlines VISUAL BASIC", Tata McGraw -Hill Publishing Company Limited, 2009.

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REFERENCE BOOKS:

1. Mohammed Azam, "Programming with Visual Basic 6.0", First Edition, Vikas Publishing House Pvt Ltd, 2007.

2. Eric A. Smith, Valor Whisler and Hank Marquis,"Visual Basic 6 Programming Bible", Wiley India (P) Ltd, 2007.

Question Paper Pattern					
Section A	10 x 1 = 10 Marks (Multiple Choice, Four options) Two questions from each unit	Section B	5 x 7 = 35 Marks (Either or choice) Two questions From each unit	Section C	3 x 10 = 30 Marks (Answer any three questions) One question from each unit

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Sem.	Course Code	Core 11 : Relational Database Management System	Total Marks: 100		Hours Per Week	Credits
V	20UAKCT503		CIA: 25	ESE: 75	5	4

OBJECTIVE:

To inculcate knowledge on RDBMS concepts, SQL and PL/SQL Operations.

COURSE OUTCOMES:

At the end of the course, the students will be able to

CO1: Describe the concepts of the relational database theory, and be able to write relational Algebra expressions for queries (Understand)

CO2: Explain the basics of SQL and construct queries using SQL (Understand)

CO3: Demonstrate Data Management and Retrieval and construct queries using SQL (Apply)

CO4: Use the PL/SQL code constructs of IF-THEN-ELSE and LOOPS type as well as syntax (Apply)

CO5: Validate source code of procedures, functions and triggers (Evaluate)

UNIT - I

Database Concepts: An Introduction - Database system applications - DBMS – Components of DBMS. A Relational Approach: Relationships - Relational Data Model - Integrity Rules - Relational algebra - Relational calculus. Database Design: Data Modeling - ER Diagrams - Dependency - Normal forms - Dependency Diagrams

UNIT - II

Oracle9*i*: Oracle9i an introduction. Overview: Personal Databases - Client/Server Databases - SQL *Plus Environment - SQL - Logging into SQL *Plus - SQL *Plus Commands - Alternate Text Editors - SQL *Plus Worksheet - *i*SQL *Plus. Oracle Tables: DDL: Naming Rules and conventions - Data Types - Constraints - Creating Oracle Table - Displaying Table Information - Altering an Existing Table: Adding a New Column to an existing Table - Modifying an Existing Column - Adding a constraint - Dropping a Column - Dropping a Constraint - Dropping, Renaming, Truncating Table -Spooling - Error codes.

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UNIT - III

Data Management and Retrieval: DML - Adding a new Row/Record - Customized Prompts - Updating and Deleting an Existing Rows/Records - Retrieving Data from Table - Arithmetic Operations - restricting Data with WHERE clause - Sorting - Substitution Variables - DEFINE command - CASE structure. Built-in functions: Character functions - Number functions - Date functions - Group functions - Grouping Data. Multiple Tables: Joins and Set operations: Join operations - Set operations. Subquery: Single row subquery. Advanced Features: Views: Creating a view - Removing a view - altering a view. Transactions: Transaction control statements.

UNIT - IV

PL/SQL: A Programming Language: Introduction - Fundamentals - Block Structure - Comments - Data Types - Other Data Types - Declaration - Assignment operation - Bind variables - Substitution Variables - Printing - Arithmetic Operators. Control Structures and Embedded SQL: Control Structures - Nested Blocks - SQL in PL/SQL - Data Manipulation - PL/SQL Cursors: Cursors - Implicit & Explicit Cursors and Attributes – SELECT . . . FOR UPDATE Cursor - Cursor FOR Loops - Cursor with Parameters. Exceptions: Types of Exceptions.

UNIT - V

Named Blocks: Procedures - Calling a Procedure - Procedure Header - Procedure Body - Parameters - Functions – Function body – Return data types – Calling a function – Calling a function from an SQL Statement - Packages - Triggers - BEFORE Trigger - AFTER Trigger.

TEXT BOOKS:

1. Nilesh Shah - Database Systems Using ORACLE - Second edition, PHI-2009

(UNIT - I: Chapters 1 &2; UNIT - II: Chapters 3 & 4; UNIT - III: Chapters 5, 6, 7 & 9;

UNIT - IV: Chapters 10 & 11; UNIT - V: Chapters 12, 13 & 14)

2. Silberschatz, Korth, Sudarshan - Database System Concepts - Fifth Edition, McGraw Hill – 2006

(UNIT - I: Chapters 1&6)

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REFERENCE BOOKS:

1. ArunMajumdar&Pritimoy Bhattacharya - Database Management Systems – TMH - 2007.

2. Gerald V. Post - Database Management Systems – Third edition - TMH.

3. C.J. Date - An Introduction to Database Systems – Vol. 1 – Third Edition – Narosa Publishing House – 1996.

Question Paper Pattern					
Section A	10 x 1 = 10 Marks (Multiple Choice, Four options) Two questions from each unit	**Section B**	5 x 7 = 35 Marks (Either or choice) Two questions From each unit	**Section C**	3 x 10 = 30 Marks (Answer any three questions) One question from each unit

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Sem.	Course Code	Core Lab 5 : Programming Lab – Visual Basic & Oracle	Total Marks: 100		Hours Per Week	Credits
V	20UAKCP504		CIA: 40	ESE: 60	5	4

(One Program from VB and one from ORACLE)

OBJECTIVE:

To inculcate knowledge on Visual programming concepts using VB and to inculcate knowledge on RDBMS concepts and Programming with Oracle.

COURSE OUTCOMES:

At the end of the course, the students will be able to

CO1: Develop a project for handling strings. (Create)

CO2: Adapt changes in shapes and their colors. (Apply)

CO3: Sketch multiple shapes and fill them with different colors using menus.(Apply)

CO4: Demonstrate by connecting Oracle to VB as backend. (Apply)

CO5: Generate the crystal reports using VB. (Create)

Practical List

Visual Basic

1. Write a simple VB program to develop a calculator with basic operation.
2. Write a VB Program to allow the user to change the shape by selecting a particular shape from a list of options in a list box, as well as changing its color through a common dialog control.
3. Write a VB Program to create a Pop-Up menu to allow the user to change the rectangle shape fill color to red, green, and blue or to clear the fill color (restoring the grey color).
4. Write a VB Program to manipulate the Employee Database with the Data Control and displays the fields from Record set objects as a series of rows and columns using DB Grid Control.
5. Develop a VB Project for Student Database Management System using VB as front end and ORACLE as back end.
6. Develop a VB Project to generate the report for Student Data Base Management System.

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ORACLE

1. Create a table for Employee details with Employee Number as primary key and following fields: Name, Designation, Gender, Age, Date of Joining and Salary. Insert at least five rows and perform various queries using anyone Comparison, Logical, Set, Sorting and Grouping operators.

2. Create tables for library management system which demonstrate the use of primary key and foreign key. Master table should have the following fields: Accno, Title, Author and Rate. Transaction table should have the following fields: Userid, Accno, DateofIssue and Date of Return. Create a Report (Select verb) with fields Accno, Title, DateofIssue for the given Date of Return with column formats.

3. Write a PL/SQL to split the student table into two tables based on result(One table for "Pass" and another for "Fail"). Use cursor for handling records of student table. Assume necessary fields and create a student details table.

4. Create the following tables for banking system:

   I. Account_Details (Bank_name, Branch_code, Customer_name, Customer_id (Pk), Deposit_amount).

   II. Loan_Details (branch_code, Customer_name, Customer_id(fk), Loan_amount)

i) Write a Database trigger for checking data validity on the account_Details table.

ii) Write a Database trigger before delete each row not allowing deletion and give the appropriate message on the loan details table.

5. Write a PL/SQL program to handle a user-defined exception.

6. Write a PL/SQL program to find the factorial of nnumbers using recursive function.

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Sem.	Course Code	Elective I (A): Computer Graphics	Total Marks: 100		Hours Per Week	Credits
V	20UAKET505		CIA: 25	ESE: 75	6	4

OBJECTIVE:

To learn the concepts of Two Dimensional and Three Dimensional Graphics Systems.

COURSE OUTCOMES:

At the end of the course, the students will be able to

CO1: Recognize the basic concepts of graphics systems (Remember)

CO2: Classify the various algorithms for scan conversion and filling of basic objects (Understand)

CO3: Demonstrate the use of 2D Geometric transformations and 2D viewing (Apply)

CO4: Explain the different clipping operations and 3D concepts (Analyze)

CO5: Summarize the concepts of visible surface detection techniques (Evaluate)

UNIT - I

Overview of Graphics Systems - Video Display Devices - Refresh Cathode Ray Tubes - Raster Scan Displays – Random Scan Displays – Color CRT Monitors – Stereoscopic and Virtual Reality Systems – Raster Scan Systems - Random Scan Systems – Input Devices – Hard Copy Devices - Graphics Software.

UNIT - II

Output Primitives: Points and Lines – Line Drawing Algorithms – Loading Frame Buffer - Circle Generating Algorithms – Ellipse Generating Algorithms – Attributes of Output Primitives: Line Attributes – Curve Attributes-Color and Gray scale Levels – Area Fill Attributes – Character Attributes.

UNIT - III

2D Geometric Transformations: Basic Transformations – Matrix Representations and Homogeneous Coordinates – Composite Transformations - Other Transformations – Transformations Between Coordinate Systems - 2D Viewing: The Viewing Pipeline – Viewing Coordinate Reference Frame – Window-to-Viewport Co-ordinate Transformation - 2D Viewing Functions.

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UNIT - IV

2D Viewing: Clipping Operations – Point Clipping – Line Clipping – Cohen Sutherland Line Clipping – Polygon Clipping – Sutherland Hodgeman Polygon Clipping – Curve Clipping – Text Clipping – Exterior Clipping - Three Dimensional Concepts: Three Dimensional Display Methods - Parallel Projection - Perspective Projection - Depth Cueing - Visible Line and Surface Identification – Surface Rendering - Three Dimensional and Stereoscopic Views – 3D Graphics Packages.

UNIT - V

Visible Surface Detection Methods – Classification, Back-Face Detection, Depth-Buffer, Scan-Line, Depth Sorting, BSP Tree Methods, Area Sub-division and Octree Methods – Ray Casting Method – Curved Surfaces – Curved –surface Representations-Surface Contour Plots-Wireframe Methods – Visibility Detection Functions.

TEXT BOOK:

Donald Hearn and M.Pauline Baker, "Computer Graphics (C version)", Second Edition, Pearson Education, 2011.

REFERENCE BOOKS:

1. Malay K Pakhira, "Computer Graphics Multimedia And Animation", PHI, 2008.
2. Zhigang Xiang, Roy Plastock, "Computer Graphics", Second Edition, Tata McGraw Hill, 2002.
3. Amarendra N Sinha, Arun D Udai, "Computer Graphics", Tata McGraw Hill, 2008.
4. Foley, Vandam, Feiner and Hughes, "Computer Graphics Principles & Practice", Second edition in C, Pearson Education, 2001.
5. William M Newman, Robert F.Sproull, "Principles of Interactive Computer Graphics", Tata McGraw Hill International Edition.

Question Paper Pattern					
Section A	10 x 1 = 10 Marks (Multiple Choice, Four options) Two questions from each unit	Section B	5 x 7 = 35 Marks (Either or choice) Two questions From each unit	Section C	3 x 10 = 30 Marks (Answer any three questions) One question from each unit

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Sem.	Course Code	Elective I (B): Cloud Computing	Total Marks: 100		Hours Per Week	Credits
V	20UAKET506		CIA: 25	ESE: 75	6	4

OBJECTIVE:

To enhance the mechanism of computing and storage with the services offered through Cloud.

COURSE OUTCOMES:

On the Successful completion of the Course the Students will be able to

CO1: Recall the concepts of other computing technologies and the changes in Cloud (Remember)

CO2: Differentiate the nature of cloud services and deployment models (Understand)

CO3: Acquire the cloud use cases, service management and cloud orchestration (Apply)

CO4: Correlate Cloud Computing and Virtualization (Analyze)

CO5: Interpret the working nature in various perspectives of cloud service participants (Evaluate)

UNIT - I

Introduction: Cloud Computing – First Drive: Essentials – Benefits – Why Cloud? – Business and IT Perspective – Cloud and Virtualization – Cloud Services Requirements – Dynamic Cloud Infrastructure – Cloud Computing Characteristics – Cloud Adoption – Cloud Rudiments: Cost Savings with Cloud, Benefits.

UNIT – II

Cloud Deployment Models: Introduction – Cloud Characteristics – Measured Service Accounting: Cost Factor, Benefits. Cloud Deployment Models – Security in a Public Cloud – Public Versus Private Clouds – Cloud as a Service: Gamut of Cloud Solutions, Conceptual Cloud Model.

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UNIT – III

Cloud Solutions: Introduction – Cloud Ecosystem – Cloud Business Process Management: Cloud Technical Strategy, Cloud Strategy Support Areas, Cloud Use Cases – Cloud Service Management – On premise Cloud orchestration and provisioning engine – Cloud on Demand – Cloud Sourcing.

UNIT – IV

Cloud Offerings: Information Storage, Retrieval, Archive, and Protection – Cloud Analytics – Testing under Cloud – Information Security. Cloud Management: Cloud Governance. Cloud Virtualization Technology: Virtualization Defined – Virtualization Benefits: Current Virtualization Initiatives – Server Virtualization – Hypervisor Management Software.

UNIT – V

Working with Clouds: Cloud Delivery Model Considerations: Cloud Delivery Models in the Cloud Provider Perspective – Cloud Delivery Models in the Cloud Consumer Perspective. Cost Metrics and Pricing Models: Business Cost Metrics (Upfront, Ongoing, Additional Costs only), Cost Management Considerations, Pricing Models. Service Quality Metrics and SLAs: SLA Guidelines.

TEXT BOOKS:

1. Dr.Kumar Saurabh – Cloud Computing: Unleashing Next Gen Infrastructure to Application – Third Edition, Wiley Publications – 2014. (Unit I to Unit IV)
2. Thomas Erl, Zaigham Mahmood, Ricardo Puttini – Cloud Computing: Concepts, Technology &Architecture – Second Edition, Pearson Publications – 2014. (Unit V)

REFERENCE BOOKS:

1. Michael Miller – Cloud Computing – Pearson Publications – 2009
2. Anthony T.Velte, Toby J.Velte, Robert Elsenpeter– Cloud Computing: A Practical Approach – McGraw Hill Education – 2010. (Reprint 2014)
3. Barrie Sosinsky – Cloud Computing: Bible – Wiley Publications – 2016.

Question Paper Pattern					
Section A	10 x 1 = 10 Marks (Multiple Choice, Four options) Two questions from each unit	Section B	5 x 7 = 35 Marks (Either or choice) Two questions From each unit	Section C	3 x 10 = 30 Marks (Answer any three questions) One question from each unit

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Sem.	Course Code	Elective I (C): Distributed Systems	Total Marks: 100		Hours Per Week	Credits
V	20UAKET507		CIA: 25	ESE: 75	6	4

OBJECTIVE:

To provide knowledge on principles and practices underlying in the design of distributed systems.

COURSE OUTCOMES:

At the end of the course, the students will be able to

CO1: Interpret the foundation of Distributed Systems (Understand)

CO2: Acquire the knowledge about Process and Naming in Distributed Systems (Apply)

CO3: Enumerate about the communication (Remember)

CO4: Know about the Synchronization, Consistency and Replication (Understand)

CO5: Audit the Fault Tolerance in Distributed Systems (Analyze)

UNIT - I

Introduction: Definition of a Distributed System – Types of Distributed Systems. Architectures: Architectural styles – System Architectures – Architectures versus Middleware – Self Management Distributed System: The feedback control model.

UNIT - II

Processes: Threads – Virtualization – Client – Servers. Naming: Names, Identifiers and Addresses – Flat Naming: Simple Solutions – Home Based Approaches – Hierarchical Approaches – Structured Naming: Name Spaces – Name Resolution.

UNIT - III

Communication: Fundamentals – Remote Procedure Call: Basics RPC operations – Parameter passing – Asynchronous RPC – Message-Oriented Communication: Message-Oriented Transient Communication - Message-Oriented Persistent Communication - Stream-Oriented Communication: Support for Continuous Media- Streams and Quality of Service- Stream Synchronization

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UNIT - IV

Synchronization: Mutual Exclusion: A Centralized Algorithm – A Decentralized Algorithm – A Distributed Algorithm – A Token Ring Algorithm – Election Algorithm: Traditional Election Algorithms - Elections in Wireless Environments - Elections in Large-Scale Systems. Consistency and Replication: Introduction – Client-Centric Consistency Models – Replica Management.

UNIT - V

Fault Tolerance: Introduction to Fault Tolerance – Process Resilience – Reliable Client-Server Communication – Distributed Commit: Two-Phase Commit - Three-Phase Commit - Recovery: Introduction – Check pointing – Message Logging – Recovery Oriented Computing.

TEXT BOOK:

Andrew S. Tanenebaum, Maarten Van Steen – Distributed Systems: Principles and Paradigms – Second Edition, PHI Publication – 2007.

REFERENCE BOOKS:

1. George Coulouris, Jean Dollimore and Tim Kindberg - Distributed Systems Concepts and Design - Fifth Edition, Pearson Education, 2012.
2. UylessD.Black - Data Communications & Distributed Networks – Third Edition - PHI Publication – 1993.
3. Joel M.Crichlow - Introduction to Distributed & Parallel Computing - Second Edition - PHI Publication – 2001.
4. StefansCeri, GinseppePelagatti - Distributed Databases Principles and Systems - McGraw Hill - 1985.
5. SukumarGhosh - Distributed Systems An Algorithmic Approach – Second Edition – CRC Press – 2015.

Question Paper Pattern					
Section A	10 x 1 = 10 Marks (Multiple Choice, Four options) Two questions from each unit	Section B	5 x 7 = 35 Marks (Either or choice) Two questions From each unit	Section C	3 x 10 = 30 Marks (Answer any three questions) One question from each unit

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Sem.	Course Code	Skill Based Course 3 (Lab): Networking Lab	Total Marks: 100		Hours Per Week	Credits
V	20UAKSP508		CIA: 30	ESE: 45	3	3

OBJECTIVE:

To implement the services and operations of various layers of a network.

COURSE OUTCOMES:

At the end of the course, the students will able to

CO1: Determine Bit Stuffing method and Cyclic Redundancy Check (CRC) method to detect errors (Apply)

CO2: Validate a Client – Server application for chat and socket programming using java dot net package (Evaluate)

CO3: Illustrate Remote Procedure Call / Remote Method Invocation (Apply)

CO4: Demonstrate Simple FTP using dot net package (Apply)

CO5: Validate UDP Client Server Communication using Bind, SendTo, and RecvFrom System Calls (Evaluate)

PRACTICAL LIST

1. Write a C program to implement Bit Stuffing method in Data Framing.

2. Write a C++ program to implement Cyclic Redundancy Check (CRC) method to detect errors.

3. Develop a Client – Server application for chat using java dot net package.

4. Write a java program to implement socket programming using java dot net package.

5. Write a java program to implement Remote Procedure Call / Remote Method Invocation.

6. Write a java program to implement Simple File Transfer Protocol using dot net package.

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7. Write a java program to implement of UDP Client Server Communication using Bind, SendTo, and RecvFrom System Calls.

8. Write a java program to implement Remote Command Execution.

9. Write a java program to download a image from client to server.

10. Write a java program to implement the ping programming.

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Sem.	Course Code	Advanced Learners Course 2 (A) :	Total Marks:100		Hours Per Week	Credits
V	20UAKAL509	Software Project Management	CIA :-	ESE :100	-	2

OBJECTIVE:

To enable the students understand the stages of software project, problems, concerns, and role of the Management.

COURSE OUTCOMES:

At the end of the course, the students will able to

CO1: Know the basic concepts of software project management (Understand)

CO2: Identify the project planning activities (Analyze)

CO3: Analyze Estimation Techniques (Analyze)

CO4: Classify and manage the Risk (Apply)

CO5: Produce a work plan, resource schedule and monitor the progress of projects (Create)

UNIT - I

INTRODUCTION TO SOFTWARE MANAGEMENT: Introduction-What is a Project? - Software Project Versus Other Types of Project- Activities Covered by Software Project Management-Plans, Methods and Methodologies - Some Ways of Categorizing Software Projects - Stakeholders - What is Management?- Management Control.

UNIT - II

AN OVERVIEW OF PROJECT PLANNING: Introduction to Step Wise Project Planning - Select Project - Identify Project Scope and Objectives - Identify Project Infrastructure - Analyze Project Characteristics - Identify Project Products and Activities - Estimate Effort For Each Activity -Identify Activity Risks - Allocate Resources - Review/Publicize Plan - Execute Plan / Lower Levels of Planning.

UNIT - III

SOFTWARE EFFORT ESTIMATION: Introduction - Where are Estimates Done? - Problems With Over and Under Estimates - The Basics for Software Estimating - Software Effort Estimation Techniques - Bottom-Up Estimating - The Top-Down Approach and Parametric Models -Expert Judgment- COCOMO: A Parametric Productivity Model.

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UNIT - IV

ACTIVITY PLANNING: Objectives - When to Plan - Forward and Backward Pass. RISK MANAGEMENT: Introduction -Risk - Categories of Risk - A Framework for Dealing with Risk - Risk Identification - Risk Assessment - Risk Planning - Risk Management - Evaluating Risks To The Schedule - Applying the PERT Technique - Monte Carlo Simulation - Critical Chain Concepts.

UNIT - V

RESOURCE ALLOCATION: Introduction - The Nature of Resources – Identifying Resources Requirements – Scheduling Resources - Creating Critical Paths - Counting the Cost - Publishing the Resource Schedule - Cost Schedules. MONITORING AND CONTROL: Creating the Framework- Collecting the Data - Visualizing Progress-Cost Monitoring.

TEXT BOOK:

Bob Hughes and Mike Cotterell "Software Project Management", Fifth Edition, TATA McGraw - HILL Publications, 2010.

REFERENCE BOOKS:

1. J. Sathyapriya, "Software Project Management", First Edition, Sree Magnus Publications, 2011.
2. Joel Henry , "Software Project Management - A Real world guide to success", Second Edition, Pearson Education , 2005.
3. Andrew Stellman and Jennifer Greene, "Applied Software Project Management", First Reprint, Shroff Publishers& Distributors Pvt.Ltd, 2005.
4. Robert K.Wysocki, "Effective Software Project Management", First edition, Wiley India Edition, 2006.
5. S.A.Kelkar , "Software Project Management A Concise Study", Revised Edition, Prentice Hall of India Pvt.Ltd , 2007.
6. Walker Royce "Software Project Management – A Unified framework", Fifth Edition,Pearson Education , 2002.

QUESTIONPAPER PATTERN		
SECTION–A	**SECTION–B**	**SECTION–C**
10x2=20 Marks (Answer any 10 questions out of 12)	**5 x 7 = 35 Marks** (Either or choice) Two questions from each unit	**3 x 15 = 45 Marks** (Answer any three questions out of 5) One question from each unit

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Sem	Course Code	Advanced Learners Course – 2 (B): Linux Programming	Total Marks :100		Hours Per Week	Credits
V	20UAKAL510		CIA : -	ESE : 100	-	2

OBJECTIVE:

To enable the students understand the concepts of Components of Linux, Linux Programming and Administration.

COURSE OUTCOMES:

At the end of the course the students will be able to

CO1: Understanding the basic concepts and utilities of Linux (Understanding)

CO2: Use the set of commands and utilities in Linux systems for system administration (Understanding)

CO3: Apply the appropriate Linux commands for various system operations (Apply)

CO4: Design programs and scripts for process management (Create)

CO5: Create Socket Programs for connection management (Create)

UNIT - I

Getting Started: An Introduction to Unix, Linux and GNU: What is Unix? – What is Linux? – Linux distributions – Programming Linux: Linux Programs –Text Editors- The C compiler – Development System Roadmap.

UNIT - II

Shell Programming: Why program with a Shell? – What is a Shell? - Pipes and Redirection – The Shell as a programming language – Shell syntax: Variables, Conditions, Control Structures, Functions, Commands, Command Execution.

UNIT - III

Working with Files: Linux File Structure – System calls and Device drivers – Library Functions – Low level file access – The standard I/O library – Formatted Input and Output: printf, fprintf, and sprint-scanf, fscanf, and sscanf.

UNIT - IV

Processes and Signals: What is a process? – Process structure – Starting New Processes. Inter-process communication: Pipes: What is a Pipe? – Process Pipes – The Pipe call – Parent and Child processes.

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UNIT - V

Semaphores: Semaphore definition, Using Semaphores – Shared Memory – Message Queues. Sockets: What is a Socket? – Socket Connections: Creating a Socket, Socket addresses, Naming a Socket, Creating a Socket Queue, Accepting and Requesting connections, closing a Socket.

TEXT BOOK:

Neil Matthew, Richard Stones, "Beginning Linux Programming", Wiley India Publications, Fourth Edition, 2008.

REFERENCE BOOKS:

1. Evi Nemeth, Garth Snyder, TrentR.Hein, "Linux Administration", Pearson Education, Second Edition, 2007.

2. Steve Shah, Wale Soyinka, "Linux Administration – A Beginner's guide", TMH Publications, Fourth Edition, 2005.

3. Randal K.Michale, "Mastering Unix/Linux/Solaris Shell Scripting", Wiley-dream tech India Pvt Ltd, First Edition, 2003.

4. Michele Petrovsky, Stephen Wysham and Mojo Nichols, " Linux Database Bible", Hungry Minds, IDG Books India Pvt Ltd, 2001.

5. NIIT, "Operating System Linux", Prentice Hall of India Pvt Ltd, 2006.

QUESTIONPAPER PATTERN		
SECTION–A	**SECTION–B**	**SECTION–C**
10x2=20 Marks (Answer any 10 questions out of 12)	**5 x 7 = 35 Marks** (Either or choice) Two questions from each unit	**3 x 15 = 45 Marks** (Answer any three questions out of 5) One question from each unit

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Sem.	Course Code	Core 12 : DOT NET Programming	Total Marks: 100		Hours Per Week	Credits
VI	20UAKCT601		CIA: 25	ESE: 75	6	4

OBJECTIVE:

To provide the knowledge of DOT NET Frameworks along with C# and ASP.NET.

COURSE OUTCOMES:

At the end of the course, the students will able to

CO1: Describe the basics of C# Environment and .NET Technology. (Remember)

CO2: Elaborate the concepts of Methods, Classes & Objects, Inheritance & Polymorphism. (Understand)

CO3: Acquire knowledge in Interfaces, Operator Overloading, Console I/O Operations, Windows and Web-Based Application Development on .NET (Apply)

CO4: Demonstrate the concepts of the Data Access with ADO.NET and ASP.NET Essentials. (Apply)

CO5: Explain the ideas of Application Structure and State, Validation Controls and ASP.NET Web Services (Analyze)

UNIT - I

Understanding .NET: The C# Environment – The .Net Strategy – The Origins of .NET Technology – The .NET Framework – The Common Language Runtime – Framework Base Classes – Benefits of the .NET Approach. Overview of C#: A simple C# Program, Namespaces, Using Aliases for Namespace Classes, Main with a Class, Multiple Main Methods, Providing Interactive Input . Literals, Variables and Data Types : Literals-Variables - Data Types -- Value Types. Decision Making and Branching. Decision Making and Looping: while, do and for statements.

UNIT - II

Methods in C#: Introduction – Declaring Methods -- The Main Method – Invoking Methods – Nesting of Methods - Pass by Value – Pass by Reference. Classes and Objects: Defining a class – Adding Variables and Methods – Member Access Modifiers – Creating Objects – Accessing Class Members – Constructors – Destructors. Inheritance and Polymorphism: Classical & Containment Inheritance –

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Defining a Subclass – Visibility Control: Class Visibility – Class Members Visibility – Multilevel and Hierarchical Inheritance – Overriding, Hiding, Abstract & sealed Methods - Polymorphism.

UNIT - III

Interfaces: Multiple Inheritance: Introduction – Defining and Extending an Interface – Implementing Interfaces. Operator Overloading: Overloadable Operators – Defining Operator Overloading – Overloading Unary Operators - Overloading Binary Operators. Managing Console I/O Operations: The Console Class – Console Input – Console Output. Windows and Web-based Application Development on .NET: Overview of Microsoft Visual Studio 2005 IDE – Controls in Microsoft Visual Studio – Creating and Running a samplewinapp Windows Application.

UNIT - IV

Data Access with ADO.NET: Understanding ADO.NET – New Features of ADO.NET in .NET Framework – Architecture of ADO.NET – Creating Connection Strings - Creating a connection to a Database: OLEDB Database – creating a Command Object. ASP.NET Essentials: Introducing New Features of ASP.NET – ASP.NET Core Services – ASP.NET Web Forms - ASP.NET Web Pages 2 – Describing the ASP.NET Technologies. Developing a Web Application: ASP.NET Coding Models - Understanding ASP.NET Page Directives.

UNIT – V

Application Structure and State: Structure of an Application – The Global.asax Application File -Using States – HTTP Handlers. Validation Controls. ASP.NET Web Services: Introducing Web Services – Infrastructure of ASP.NET Web Services – HTTP-GET and HTTP-POST - Simple Object Access Protocol – Creating a Web Service : Creating a Web Service – Declaring Own Web Service. The Code Model of ASP.NET Web Services.

TEXT BOOKS:

1. E.Balagurusamy, "Programming in C#", A Primer Second Edition, Tata McGraw Hill Publications, 2008. (Unit - I, II & III)

2."..NET 4.5 Programming (6-in-1) Black Book", Dreamtech Press, 2016. (Unit – IV: Chapters 12, 18, 19 & Unit - V: Chapters 20, 23, 31)

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REFERENCE BOOKS:

1. B.Rama Krishna Rao, "Programming with C# Concepts and Practice", PHI Publications, 2007.
2. Vikas Gupta, ".NET Programming", Dreamtech Press, 2008.
3. Dave Mercer, "ASP.NET A Beginner's Guide", Tata McGraw Hill Publications, 2010.
4. Matt J. Crouch, "ASP.NET and VB.NET Web Programming", Pearson Education, 2002.

Question Paper Pattern					
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Sem.	Course Code	Core Lab 6 : Programming Lab - C# & ASP.Net	Total Marks: 100		Hours Per Week	Credits
VI	20UAKCP602		CIA: 40	ESE: 60	5	4

(One Program from C# and one Program from ASP.Net)

OBJECTIVE:

To enable the students to acquire programming knowledge in .Net Framework along with the area of C# and ASP.Net

COURSE OUTCOMES:

At the end of the course, the students will able to

CO1: Compare C# Windows Forms Application and C# Console Application (Understand)

CO2: Acquire knowledge in Toolbox Controls (Apply)

CO3: Construct C# and ASP.Net programs using Database Connectivity (Create)

CO4: Demonstrate the use of web controls in ASP.Net (Apply)

CO5: Create the webpage and website using ASP.Net (Create)

PRACTICAL LIST

C#

1. Develop a C# Windows Forms Application using Toolbox controls.
2. Create an Age Calculator using C# Windows Forms Application.
3. Write a C# program for the Payroll Management System using Console Application.
4. Write a C# Console Application for Bank Transaction using the concept of Interfaces.
5. Write a program in C# Sharp to check whether a given String is Palindrome or not using recursion.

ASP.Net

1. Write an ASP.Net program to change the text of Label control to Bold, Italic and change its background color programmatically.
2. Write an ASP.Net program using Calendar Control.
3. Write an ASP.Net program to compare values in Textboxes using Compare Validator Control.
4. Create a Web Page for the Railway Ticket Reservation System using ASP.Net controls.
5. Create a Website for College using ASP.Net.

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Sem.	Course Code	Elective II (A): Web Technology	Total Marks: 100		Hours Per Week	Credits
VI	20UAKET603		CIA: 25	ESE: 75	6	4

OBJECTIVE:

To inculcate knowledge on Web Technological concepts.

COURSE OUTCOMES:

At the end of the course the student will be able to

CO1: Recall different Internet protocols and basics of E-Commerce (Remember)

CO2: Develop a website and enhance using plug-in (Create)

CO3: Handle a dynamic webpage by the use of ASP and DHTML (Apply)

CO4: Paraphrase Life cycle and Architecture Active Web Pages (Understand)

CO5: Summarize the Basics of XML and WAP technology (Create)

UNIT - I

Introduction – DNS – FTP – TFTP – History of WWW – Basics of WWW and Browsing –Local information on the internet – HTML – Web Browser Architecture – Web Pages and Multimedia – Remote Login (TELNET) – Local login – Remote login and TELNET – A Technical perspective – TELNET as an alternative to a web browser – An introduction to Electronic Commerce – Aspects of Electronic Commerce – Types of Electronic Commerce.

UNIT - II

Introduction to Web Technology: Web pages – Tiers – Concept of a Tier – Comparison ofMicrosoft and Java Technologies – Web Pages – Static Web Pages – Plug-ins – Frames – Forms: HTML code for FORMS – Form elements.

UNIT - III

Dynamic Web Pages: Introduction –Need – Magic of Dynamic Web Pages – Overview of Dynamic Web PageTechnologies – Overview of DHTML – Common Gateway Interface – ASP – ASP Technology– ASP Example – Modern Trends in ASP – Java and JVM – Java Servlets – Java Server Pages: Life cycle of a JSP – JSP Example.

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UNIT - IV

Active Web Pages: Introduction –Active Web Pages in better solution – Java Applets – Why are Active Web Pages Powerful? – Lifecycle of Java Applets – ActiveX Controls – Java Beans. Middleware and Component-Based E-Commerce Architectures: CORBA – Java Remote Method Invocation – DCOM. EDI: Overview – Origins of EDI – Understanding of EDI – Data Exchange Standards – EDI Architecture – Significance of EDI in international trade – Financial EDI – EDI and internet.

UNIT - V

Introduction to XML: SGML – Basics of XML – XML Parsers: Elements and attributes – Document type definitions (DTD) – XML Parsers: A detailed look - The sequential Approach (SAX) – The Tree Approach - Extensible Stylesheet Language(XSL)– Need for a standard. WAP: Limitations of Mobile devices – Emergence of WAP – WAP Architecture – WAP Stack – Concerns about WAP and its future – Alternatives to WAP.

TEXT BOOK:

Achyut S Godbole and Atul Kahate, "WEB TECHNOLOGIES TCP/IP to Internet Applications Architectures", Tata McGraw-Hill Publishing Company Limited, 2003.

REFERENCE BOOKS:

1. David Mercer, "HTML- Introduction to Web Page Design and Development", Tata McGraw-Hill Publishing Company Limited, Schaum"s Outlines, 2004.

2. C Xavier, "World Wide Web Design With HTML", Tata McGraw-Hill Publishing company Limited, Tata McGraw-Hill Publishing Company Limited, 2008.

3. N.P.Gopalan & J.Akilandeswari, "Web Technology- A Developers Perspective", Second Edition, PHI, 2014.

4. Achyut S Godbole and Atul Kahate,"Web Technologies –TCP/IP Architecture, and Java Programming", Second Edition, Tata McGraw-Hill Publishing company Limited,2002.

Question Paper Pattern					
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Sem.	Course Code	Elective II (B): Mobile Computing	Total Marks: 100		Hours Per Week	Credits
VI	20UAKET604		CIA: 25	ESE: 75	6	4

OBJECTIVE:

To learn about the recent technology on mobile communications and the components of effective transmission mechanism.

COURSE OUTCOMES:

At the end of the course, the students will be able to

CO1: Recognize the basic principles of mobile computing technologies (Remember)

CO2: Classify different types of mobile telecommunication systems (Understand)

CO3: Acquire knowledge about wireless networking concepts and internet protocols (Apply)

C04: Describe the basic concepts of global System for Mobile Communications, SMS and GPRS (Understand)

C05: Explain the principles, concepts and operations of satellite systems (Evaluate)

UNIT - I

Introduction: Wireless: The Beginning – Mobile Computing – Dialogue Control – Networks – Middleware and Gateways – Developing Mobile Computing Applications. Mobile Computing Architecture: Architecture for Mobile Computing – Three-tier Architecture: Presentation – Application - Data.

UNIT – II

Mobile Computing through Telephony: Introduction - Evolution of Telephony – Multiple Access Procedures: Frequency Division Multiple Access-TDMA variance- Code Division Multiple Access-Space Division Multiple Access – Satellite Communication Systems – Mobile Computing through Telephone – Telephony Application Programming Interface (TAPI) – Computer Supported Telecommunications Applications.

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UNIT – III

Emerging Technologies: Introduction – Bluetooth: Bluetooth Protocol - Bluetooth Protocol Stack – Radio Frequency Identification (RFID) – Wireless Broadband (WIMAX) – Mobile IP: How does Mobile IP Work? , Tunneling, Cellular IP – Internet Protocol Version 6 (IPv6): Address Space, IPv6 Security, Migrating from IPv4 to IPv6- Java Card.

UNIT – IV

Global System for Mobile Communications (GSM): Introduction- Global System for Mobile Communications – GSM Architecture – Call Routing in GSM. Short Message Service (SMS): Mobile Computing over SMS – Short Message Service (SMS): Strengths of SMS - SMS Architecture - Value Added Services through SMS. General Packet Radio Service (GPRS): GPRS and Packet Data Network – GPRS Network Architecture – Applications for GPRS. Wireless Application Protocol (WAP): WAP.

UNIT – V

Satellite systems: Introduction and Applications – Routing – Localization- Handover. Broadcast systems: Overview – Convergence of broadcasting and mobile communications. Mobile Transport Layer: Classical TCP improvements. Support for Mobility: Wireless application protocol (version 1.x): Wireless Application Environment, Wireless Markup Language.

TEXT BOOKS:

1. Asoke K Talukder, Hasan Ahmed, Roopa R Yavagal – Mobile Computing: Technology, Applications and Service creation - Second Edition, Mc. Graw Hill Publication - 2010.

2. Jochen Schiller – Mobile Communications- Second Edition, Pearson Publications - 2003.

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REFERENCE BOOKS:

1. Uwe Hansmann, Lothar Merk, Martin S Nicklous – Principles of Mobile Computing - Second Edition – Springer International Edition - 2007.

2. Sundara Rajan , Ramesh , Raja Sekaran – Mobile Computing – First Edition – Sams publications – 2008.

3. Robert J. Bartz – Mobile Computing Deployment and Management - First Edition – Sybex publications – 2015.

Question Paper Pattern					
Section A	10 x 1 = 10 Marks (Multiple Choice, Four options) Two questions from each unit	**Section B**	5 x 7 = 35 Marks (Either or choice) Two questions From each unit	**Section C**	3 x 10 = 30 Marks (Answer any three questions) One question from each unit

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Sem.	Course Code	Elective II (C) : Internet of Things	Total Marks: 100		Hours Per Week	Credits
VI	20UAKET605		CIA: 25	ESE: 75	6	4

OBJECTIVE:

To enable the learners understand constraints and opportunities of networks for Internet of Things and to recognize the fundamental concepts of Internet-connected product.

COURSE OUTCOMES:

At the end of the course, the students will be able to

CO1: Interpret the vision of IoT from a global context (Understand)

CO2: Determine the market perspective of IoT (Apply)

CO3: Acquire the Architecture and use of Devices in IoT Technology (Apply)

CO4: Enumerate about the Data management in IoT (Remember)

CO5: Audit the Knowledge Management in IoT (Analyze)

UNIT - I

M2M to IoT – The Vision: Introduction - From M2M to IoT: A brief background- M2M communication – IOT – M2M towards IoT - the global context: Game changers - Trends in information and communication technologies - Implications for IoT- Barriers and concerns.

UNIT - II

M2M to IoT - A Market Perspective: Introduction - Information marketplaces - Some definitions - M2M value chains - IoT value chains – The information-driven global value chain - The international - driven global value chain and global information monopolies.

UNIT - III

M2M to IOT – An Architecture outline. IOT Technologies and Architectures: M2M and IOT Technology fundamentals – Devices and gateways - Local and wide area networking: The need for networking- Wide Area Networking - Local Area Networking

UNIT - IV

Data management: Introduction - Managing M2M data – considerations for M2M data - Business process in IOT: IoT integration with enterprise systems - Distributed business processes in IoT Everything as a service (XaaS).

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UNIT - V

M2M and IoT analytics: Introduction - purposes and considerations - analytics architecture – methodology. Knowledge management: Data, information and knowledge - A knowledge management reference architecture-Retrieval layer – IoT. Use Cases: Asset Management-e-Maintenance in the M2M Era -Smart Cities.

TEXT BOOK:

Jan Holler, Vlasios Tsiatsis, Catherine Mulligan, Stamatis Karnouskos, Stefan Avesand and David Boyle - From Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence - 1st Edition, Elsevier - 2014.

REFERENCE BOOKS:

1. Adrian McEwen, Hakim Cassimally - Designing the Internet of Things - Wiley - 2017.
2. Olivier Hersent, David Boswarthick, Omar Elloumi - The Internet of Things key Applications and Protocols - Wiley – 2017.
3. Arshdeep Bahga, Vijay Madisetti - Internet of Things: A Hands-On Approach – Universities Press – 2018.

Question Paper Pattern					
Section A	10 x 1 = 10 Marks (Multiple Choice, Four options) Two questions from each unit	**Section B**	5 x 7 = 35 Marks (Either or choice) Two questions From each unit	**Section C**	3 x 10 = 30 Marks (Answer any three questions) One question from each unit

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Sem.	Course Code	Elective III (A): Artificial Intelligence and Expert Systems	Total Marks: 100		Hours Per Week	Credits
VI	20UAKET606		CIA: 25	ESE: 75	6	4

OBJECTIVE:

To acquire knowledge on various AI Techniques, Knowledge Representation and Expert Systems and Expert systems.

COURSE OUTCOMES:

At the end of the course the students will be able to

CO1: Recognize the problem domains of Artificial Intelligence (Remember)

CO2: Classify the search techniques for solving AI problems (Understanding)

CO3: Apply the knowledge representation approaches for building knowledge base (Apply)

CO4: Design knowledge base using predicate logic and rules (Create)

CO5: Build Expert System Models for the given AI problem (Create)

UNIT - I

Introduction: AI Problems – AI techniques – Criteria for success. Problems, Problem Spaces, Search: State space search – Production Systems – Problem Characteristics – Issues in design of Search.

UNIT - II

Heuristic search techniques : Generate- and-Test – Hill Climbing – Best First Search – Problem Reduction – Constraint Satisfaction- Means-ends Analysis.

UNIT - III

Knowledge representation issues: Representations and mappings – Approaches – Issues – Using predicate logic: simple facts–Instance and ISA Relationships – Computable functions and predicates – Resolution.

UNIT - IV

Representing knowledge using rules – Procedural versus Declarative – Logic programming – Forward versus Backward Reasoning -Matching - Control knowledge.

UNIT - V

Expert Systems – Definition – Characteristics - architecture - Knowledge Engineering- Expert System Life Cycle - Knowledge Acquisition Strategies - Expert System Tools.

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TEXT BOOKS:

1. Elaine rich , Kevin Knight and Shivashankar B.Nair , "Artificial Intelligence ", Tata McGraw Hill Publication, Third Edition, 2006 (Units - I to IV)

2. V S Janaki Raman, K Sarukesi and P Gopalakrishnan, "Foundations of Artificial Intelligent and Expert Systems", MacMillan India limited, 2000. (Unit - V)

REFERENCE BOOKS:

1. Stuart Russell & Peter Norvig, "Artificial Intelligence a modern Approach", Second Edition, Perason Education, 2003.

2. R.B.Mishra , "Artificial Intelligence ", PHI, 2011.

3. Alison Cawsey, "The essence of Artificial Intelligence- Essence of Computing", Dorling Kindersley(India) pvt. Ltd, First Edition, 2011

4. N.P Padhy, "Artificial Intelligence and Intelligence Systems", Oxford University Press, First Edition, 2005

5. Rathi Narayan, "Artificial Intelligence", Eswar Press Publishing, First Edition, 2010

Question Paper Pattern					
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Sem.	Course Code	Elective III (B): Data Mining	Total Marks: 100		Hours Per Week	Credits
VI	20UAKET607		CIA: 25	ESE: 75	6	4

OBJECTIVE:

To enable the students understand the Basic and advanced concepts of Data Mining.

COURSE OUTCOMES:

At the end of the course, the students will be able to

CO1: Identify the Basic Tasks and the Social Implications of Data Mining (Remember)

CO2: Discuss the Data Mining techniques and Genetic Algorithms (Understand)

CO3: Compare the Classification and Rule Based Algorithms (Analyze)

CO4: Observe the concepts and algorithms of Clustering (Understand)

CO5: Identify the concepts of Web Content Mining and Web Usage Mining (Remember)

UNIT - I

Introduction-Basic Data Mining Tasks – Data Mining Versus Knowledge Discovery in Data Bases – Data Mining Issues – Data Mining Matrices – Social Implications of Data Mining – Data Mining from Data Base Perspective.

UNIT - II

Data Mining Techniques-introduction – A Statistical Perspective on data mining – Similarity Measures–Decision Trees – Neural Networks – Activation Functions-Genetic Algorithms.

UNIT - III

Classification: Introduction – Statistical – Based Algorithms – Distance Based Algorithms – Decision Tree – Based Algorithms-ID3, C4.5 CART – Neural Network Based Algorithms: Propagation-NN Supervised Learning – Rule Based Algorithms: Generating Rules from a DT – Generating Rules from a Neural Net.

UNIT - IV

Clustering: Introduction – Similarity and Distance Measures – Outliers – Hierarchical Algorithms. Partitional Algorithms: Minimum Spanning Tree-Squared Error , K-Means Clustering, Nearest

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Neighbor Algorithm - Association Rules : introduction - Large Item Sets – Basic Algorithms : Apriori Algorithm- Sampling Algorithm-partitioning.

UNIT - V

Web Mining: Introduction-Web Content Mining: Crawlers, Harvest System-Web Structure Mining: PageRank- Web Usage Mining: Preprocessing-Data Structures-Pattern Discovery: Association Rules, Sequential Patterns, Frequent Episodes-Pattern Analysis.

TEXT BOOK:

Margaret H.Dunbam, "Data Mining Introductory and Advanced Topics ", Pearson Education, 2003.

REFERENCE BOOKS:

1. Jiawei Han and Micheline Kamber ," Data Mining Concepts & Techniques ", Kaufmann Publishers , 2006.
2. Arun K. Pujari , "Data Mining Techniques", Universities Press, 2001.
3. Pieter Adriaans and Dolf Zantinge, "Data Mining", Pearson Education,2007.

Question Paper Pattern					
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Sem.	Course Code	Elective III (C): Cryptography and Network Security	Total Marks: 100		Hours Per Week	Credits
VI	20UAKET608		CIA: 25	ESE: 75	6	4

OBJECTIVE:

To impart knowledge regarding cryptography and network security.

COURSE OUTCOMES:

At the end ofthe course, the students willable to

CO1: Classify the symmetric encryption techniques (Understand)

CO2: Illustrate various Public key cryptographic techniques (Analyze)

CO3: Evaluate and authentication algorithms. (Evaluate)

CO4: Classify and Discuss hash Functions (Apply)

CO5: Summarize the concepts of digital signature algorithms (Create)

UNIT - I

Cryptography Techniques: Introduction – PlainText and CipherText - Symmetric Cipher model – Substitution techniques – transposition techniques – ROTOR machines – Steganography – The DES – The strength of DES - block chipper design principles.

UNIT - II

Multiple Encryption and Triple DES - Electronic Code Book – Cipher Block Chaining Mode - Cipher Feedback Mode – Output Feedback Mode – Counter Mode.

UNIT - III

Public Key Cryptography and RSA: Principles of Public-Key Cryptosystems - The RSA Algorithm- Other Public-Key Cryptosystems: Diffie-Hellman Key Exchange- Elgamal Cryptograpic System – Elliptic Curve Arithmetic: Abelian Groups - Pseudorandom number generation based on an asymmetric Cipher.

UNIT - IV

Cryptographic Hash Functions: Applications of Cryptographic Hash functions - Two Simple Hash Functions - Requirements and Security - Hash Functions based on Cipher Block Chaining.

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UNIT - V

Digital Signatures – Elgamal Digital Signature Scheme – Schnorr Digital Signature Scheme – NIST Digital Signature Algorithm – Elliptic Curve Digital Signature Algorithm- RSA-PSS Digital Signature Algorithm.

TEXT BOOK:

William Stallings, "Cryptography and Network Security Principles and Practice", Sixth Edition, Pearson Education Inc., 2016

REFERENCE BOOKS:

1. Atulkahate, "Cryptography and Network Security", Second Edition, Third Edition,TMH, 2013
2. Behrouz A.forouzan, "Cryptography and Network Security", Second Edition, TMH 2013

Question Paper Pattern					
Section A	10 x 1 = 10 Marks (Multiple Choice, Four options) Two questions from each unit	**Section B**	5 x 7 = 35 Marks (Either or choice) Two questions From each unit	**Section C**	3 x 10 = 30 Marks (Answer any three questions) One question from each unit

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Sem.	Course Code	Skill Based Course 4 (Lab) : Software Testing Lab	Total Marks: 75		Hours Per Week	Credits
VI	20UAKSP610		CIA: 30	ESE: 45	3	3

OBJECTIVE:

To inculcate knowledge in the phases of software testing process using Software Testing tools.

COURSE OUTCOMES:

At the end of the course, the students willable to

CO1: Demonstrate functional testing for a software application (Apply)

CO2: Apply white box testing and black box testing using software testing tool (Apply)

CO3: Develop a test plan using open source software testing tool (Create)

CO4: Acquire the knowledge on requirement based test generation (Apply)

CO5: Detect mutation testing using open source software testing tool (Analyze)

PRACTICAL LIST

1.Write a C program to find the sum of individual digits and test the program with test cases.

2. Write a C program to accept the students name,5 subject marks and declare result as pass if the students gets minimum 40 in each and test the program with test cases.

3. Write a C++ program for palindrome string checking using pointers and test the program with test cases.

4. Write a report on various possible bugs of a real time application and study its system specifications.

5. Write the procedure and test the functional GUI for an application using a software testing tool.

6. Write the procedure and perform the control flow white box testing for an application using a software testing tool.

7. Write the procedure and perform an error guessing black box testing for an application using a software testing tool.

8. Write a Test Plan using an open source software testing tool.

9. Write the procedure and perform test generation using an open source software testing tool.

10.Write the procedure and perform the Mutation Testing with an analysis using an open source software testing tool.

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