FATIMA COLLEGE (AUTONOMOUS)

Re-Accredited with "A++" Grade by NAAC (4th Cycle)

Maryland, Madurai- 625 018, Tamil Nadu, India

NAME OF THE DEPARTMENT: INFORMATION TECHNOLOGY

NAME OF THE PROGRAMME : B. Sc.

PROGRAMME CODE : USIT

ACADEMIC YEAR : 2023-24

FATIMA COLLEGE (AUTONOMOUS), MADURAI-18

DEPARTMENT OF INFORMATION TECHNOLOGY

PROGRAMME CODE : USIT

PART – III -MAJOR, ALLIED & ELECTIVES

S.NO	SEM.	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. Mks
1.	I	23I1CC1	PROGRAMMING IN C	5	4	40	60	100
2.		23I1CC2	C PROGRAMMING PRACTICAL	5	5	40	60	100
3.		23I1FC	FUNDAMENTALS OF COMPUTER	2	2	40	60	100
4.	II	23I2CC3	JAVA PROGRAMMING	5	5	40	60	100
5.		23I2CC4	JAVA PROGRAMMING & DATA STRUCTURES PRACTICAL	5	5	40	60	100
6.		23I2SE3	AUTOMATION SKILLS	2	2	40	60	100
7.	III	19I3CC5	DATABASE MANAGEMENT SYSTEM	6	4	40	60	100
8.		19I3CC6	LAB III - RDBMS	6	3	40	60	100
9.	IV	22I4CC7	PROGRAMMING IN JAVA	6	4	40	60	100
10.		22I4CC8	LAB IV - JAVA PROGRAMMING	6	3	40	60	100

S.NO	SEM.	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. Mks
11.	V	23I5CC9	.NET PROGRAMMING	5	5	40	60	100
12.		23I5CC10	LAB V - .NET PROGRAMMING	6	3	40	60	100
13.		19I5CC11	SOFTWARE ENGINEERING	5	3	40	60	100
14.		19I5CC12	OPERATING SYSTEM	5	5	40	60	100
15.	VI	23I6CC13	PYTHON PROGRAMMING	5	5	40	60	100
16.		23I6CC14	LAB VI - PYTHON PROGRAMMING	6	3	40	60	100
17.		19I6CC15	DATA COMMUNICATION AND NETWORKING	5	5	40	60	100
18.		21I6PR	PROJECT	-	3	40	60	100

ALLIEDCOURSES

S.NO	SEM.	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. MKs
1.	I	23G1GEI1	DISCRETE MATHEMATICS	5	5	40	60	100
2.	II	23G2GEI2	OPERATIONS RESEARCH	5	5	40	60	100
3.	III	21P3ACI3	DIGITAL PRINCIPLES AND COMPUTER ARCHITECTURE	5	5	40	60	100
4.	IV	21AC4ACI4	ACCOUNTING IN DECISION	5	5	40	60	100

S.NO	SEM.	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. MKs
			MAKING					

ELECTIVES

S.No	SEM.	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. Mks
1.	V	**19I5ME1/19I5ME2**	DATA MINING/NETWORK SECURITY	5	5	40	60	100
2.	VI	**22I6ME3/ 21I6ME4**	CLOUD TECHNOLOGY/ MOBILE COMMUNICATION	5	5	40	60	100
3.		**19I6ME5/ 19I6ME6**	INFORMATION STORAGE AND MANAGEMENT /COMPUTER GRAPHICS	5	5	40	60	100

PART – IV

- **VALUE EDUCATION**
- **ENVIRONMENTAL AWARENESS**
- **NON MAJOR ELECTIVE**
- **SKILL BASED COURSES**

S. No	SEM.	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. Mks
1.	I	**23G1VE**	Value Education (Including Meditation in	1	1	40	60	100

S. No	SEM.	COURSECODE	COURSE TITLE	HRS	CREDIT	CIA Mks	ESE Mks	TOT. Mks
			Action Movement)					
2.		**23I1SE1**	Non Major Elective– Office Automation (Offered to other major Students)	2	2	40	60	100
3.	II	**23G2VE**	Value Education	1	1	40	60	100
4.		**23I2SE2**	Non Major Elective – Multimedia Lab (Offered to other major Students)	2	2	40	60	100
5.	III	**21G3EE**	Environmental Studies	1	1	40	60	100
6.		**22I3SB1**	Skill based– Excel using VBA	2	2	40	60	100
7.	IV	**21G4GS**	Gender Studies	1	1	40	60	100
8.		**19I4SB2**	Skill based - Analytical Skills	2	2	40	60	100
9.	V	**23I5SB3**	Skill based – Basics of HTML5	2	2	40	60	100
10.		**23I5SB4**	Skill based – Web Programming using PHP	2	2	40	60	100
11.	VI	**23I6SB5**	Skill based – Advanced HTML5	2	2	40	60	100
12.		**23I6SB6**	Skill based – Fundamentals of Android Programming	2	2	40	60	100

OLD SYLLABUS

Deletion

5%

II B.Sc. Information Technology

SEMESTER – IV

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19I4SB2	ANALYTICAL SKILLS	Lecture	2	2

COURSE DESCRIPTION

This course content plays a vital role for clearing any competitive exam and it covers all the Quantitative Aptitude topics and an in-depth understanding of this subject.

COURSE OBJECTIVES

To prepare the student with the range of skills which facilitate them to enhance their employability quotient and do well in the professional space.

UNITS

UNIT –I NUMBER SYSTEM (6HRS.)

Different Number System, More on Numbers, Ratio and Proportion, Percentage, Approximate Value Calculation. Puzzle 1, Puzzle 2, Games, Race Problmes.

UNIT –II ARITHMETIC ABILITY (6 HRS.)

Mixtures, Averages, Time and Distance, Problems Based on Trains, Rowing Downstream and Upstream.

UNIT –III ARITHMETIC APTITUDE (6 HRS.)

Pipes and Cistern, Time and Work, Clocks, Mensuration Area and Volume.

UNIT –IV LOGICAL REASONING (6 HRS.)

SERIES: Locating Wrong Number, Probability, Data Interpretation, Data Sufficiency Series Completion, Analogy, Classification, Coding – Decoding, Blood Relations.

UNIT –V VERBAL REASONING (6 HRS.)

Direction Sense Test, Alphabetical Quibble, Number,Ranking& time, Sequence test, Logical Sequence of Words, Arithmetical Reasoning.

REFERENCES:

1. Aggarwal, R. S. Quantitative Aptitude. S. Chand, 2017.

Digital Open Educational Resources (DOER):

1. Quantitative Aptitude Tutorial - Tutorialspoint
https://www.tutorialspoint.com/quantitative_aptitude/index.htm
2. Aptitude Tutorial - Students Tutorial
https://www.studentstutorial.com/aptitude/aptitude-tutorial.php/aptitude-tutorial.php

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1NUMBER SYSTEM				
1.1	Syllabus Discussion	1	Discussion	Black Board
1.2	Different Number System	1	Chalk & Talk	Black Board
1.3	More on Numbers	1	Chalk & Talk	Black Board
1.4	Ratio and Proportion	1	Chalk & Talk	Black Board
1.5	Percentage	1	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
1.6	Approximate Value Calculation	1	Chalk & Talk	Black Board
UNIT -2 ARITHMETIC ABILITY				
2.1	Mixtures	1	Chalk & Talk	Black Board
2.2	Averages	1	Chalk & Talk	Black Board
2.3	Time and Distance	1	Chalk & Talk	Black Board
2.4	Problems Based on Trains	1	Chalk & Talk	Black Board
2.5	Rowing Downstream and Upstream	2	Chalk &Talk	Black Board
UNIT – 3ARITHMETIC APTITUDE				
3.1	Pipes and Cistern	1	Chalk & Talk	Black Board
3.2	Time and Work	2	Chalk & Talk	Black Board
3.3	Clocks	2	Chalk & Talk	Black Board
3.4	Mensuration Area and Volume	1	Chalk & Talk	Black Board
UNIT – 4LOGICAL REASONING				
4.1	Locating Wrong Number	1	Chalk & Talk	Black Board
4.2	Probability	1	Chalk & Talk	Black Board
4.3	Data Interpretation, Data Sufficiency Series Completion	1	Chalk & Talk	Black Board
4.4	Analogy, Classification	1	Chalk &	Black

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
			Talk	Board
4.5	Coding – Decoding	1	Chalk & Talk	Black Board
4.6	Blood Relations	1	Chalk & Talk	Black Board
UNIT – 5VERBAL REASONING				
5.1	Direction Sense Test, Alphabetical Quibble	2	Chalk & Talk	Black Board
5.2	Ranking & time	1	Chalk & Talk	Black Board
5.3	Sequence test	1	Chalk & Talk	Black Board
5.4	Logical Sequence of Words	1	Chalk & Talk	Black Board
5.5	Arithmetical Reasoning	1	Chalk & Talk	Black Board

INTERNAL - UG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Quiz 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	**2**	**2**	**-**	**-**	**-**	**4**	-	**4**	10 %
K2	**2**	**2**	**5**	**-**	**-**	**9**	-	**9**	22.5 %
K3	**3**	**3**	**-**	**-**	**5**	**11**	-	**11**	27.5 %

K4	**3**	**3**	**-**	**5**	**-**	**11**	-	**11**	27.5 %
Non Scholastic	**-**	**-**	**-**	**-**	-		**5**	**5**	12.5 %
Total	**10**	**10**	**5**	**5**	**5**	**35**	**5**	**40**	**100 %**

End Semester - UG

Levels	Section A (i) 5 Mks.	Section A (ii) 5 Mks	Section B 8 Mks.	Section C 12 Mks	Section D 20 Mks.	Section E 10 Mks.	Total 60Mks.	
K1	**5**	**5**	**-**	**4**	**-**	-	**14**	23.33 %
K2	**-**	**-**	**8**	**4**	**-**	-	**12**	20 %
K3	**-**	**-**	**-**	**-**	**20**	-	**20**	33.33 %
K4	**-**	**-**	**-**	**4**	**-**	10	**14**	23.34 %
Total	**5**	**5**	**8**	**12**	**20**	**10**	**60**	**100 %**

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC					NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

UG CIA Components

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Quiz	2 *	-	5 Mks
C6	-	Attendance		-	5 Mks

The best out of two will be taken into account

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand the short cut methods.	K1& K2	PSO1& PSO3
CO 2	Apply general mathematical techniques.	K2 & K3	PSO1& PSO3

CO 3	Develop their critical thinking.	K2 & K3	PSO1& PSO3
CO 4	Recall the formulas.	K1& K2	PSO1& PSO2
CO 5	Solve the sums by applying shortcut methods with time management.	K2 & K3	PSO8

Mapping of C0s with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	1	3	2	2	1	1	1
CO2	3	1	3	2	2	2	2	1
CO3	3	1	3	2	2	1	2	2
CO4	3	3	2	1	2	2	2	2
CO5	1	1	1	1	1	2	1	3

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ModeratelyCorrelated – **2**

♦WeaklyCorrelated -**1**

COURSE DESIGNER:

1. **Staff Name: Dr. V. JANE VARAMANI SULEKHA**

Forwarded By

V. Mageshwari

HOD'S Signature & Name

NEW SYLLABUS

Changes

5%

II B.Sc. Information Technology

SEMESTER – IV

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19I4SB2	ANALYTICAL SKILLS	Lecture	2	2

COURSE DESCRIPTION

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To prepare the student with the range of skills which facilitate them to enhance their employability quotient and do well in the professional space.

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UNIT –I NUMBER SYSTEM (6HRS.)

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UNIT –II ARITHMETIC ABILITY (6 HRS.)

Mixtures, Averages, Time and Distance, Problems Based on Trains, Rowing Downstream and Upstream.

UNIT –III ARITHMETIC APTITUDE (6 HRS.)

Pipes and Cistern, Time and Work, Clocks, Mensuration Area and Volume.

UNIT –IV LOGICAL REASONING (6 HRS.)

SERIES: Locating Wrong Number, Probability, Data Interpretation, Data Sufficiency Series Completion, Analogy, Classification, Coding – Decoding, Blood Relations.

UNIT –V VERBAL REASONING (6 HRS.)

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Digital Open Educational Resources (DOER):

3. Quantitative Aptitude Tutorial - Tutorialspoint
https://www.tutorialspoint.com/quantitative_aptitude/index.htm

4. Aptitude Tutorial - Students Tutorial
   https://www.studentstutorial.com/aptitude/aptitude-tutorial.php/aptitude-tutorial.php

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1NUMBER SYSTEM				
1.1	Syllabus Discussion	1	Discussion	Black Board
1.2	Different Number System	1	Chalk & Talk	Black Board
1.3	More on Numbers	1	Chalk & Talk	Black Board
1.4	Ratio and Proportion	1	Chalk & Talk	Black Board
1.5	Percentage	1	Chalk & Talk	Black Board
1.6	Approximate Value Calculation	1	Chalk & Talk	Black Board
UNIT -2 ARITHMETIC ABILITY				
2.1	Mixtures	1	Chalk & Talk	Black Board
2.2	Averages	1	Chalk & Talk	Black Board
2.3	Time and Distance	1	Chalk & Talk	Black Board
2.4	Problems Based on Trains	1	Chalk & Talk	Black Board
2.5	Rowing Downstream and Upstream	2	Chalk &Talk	Black Board
UNIT – 3ARITHMETIC APTITUDE				

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
3.1	Pipes and Cistern	1	Chalk & Talk	Black Board
3.2	Time and Work	2	Chalk & Talk	Black Board
3.3	Clocks	2	Chalk & Talk	Black Board
3.4	Mensuration Area and Volume	1	Chalk & Talk	Black Board
UNIT – 4LOGICAL REASONING				
4.1	Locating Wrong Number	1	Chalk & Talk	Black Board
4.2	Probability	1	Chalk & Talk	Black Board
4.3	Data Interpretation, Data Sufficiency Series Completion	1	Chalk & Talk	Black Board
4.4	Analogy, Classification	1	Chalk & Talk	Black Board
4.5	Coding – Decoding	1	Chalk & Talk	Black Board
4.6	Blood Relations	1	Chalk & Talk	Black Board
UNIT – 5VERBAL REASONING				
5.1	Direction Sense Test, Alphabetical Quibble	2	Chalk & Talk	Black Board
5.2	Ranking & time	1	Chalk & Talk	Black Board
5.3	Sequence test	1	Chalk & Talk	Black Board
5.4	Logical Sequence of Words	1	Chalk & Talk	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
5.5	Arithmetical Reasoning	1	Chalk & Talk	Black Board

INTERNAL - UG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Quiz 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	2	2	-	-	-	4	-	4	10 %
K2	2	2	5	-	-	9	-	9	22.5 %
K3	3	3	-	-	5	11	-	11	27.5 %
K4	3	3	-	5	-	11	-	11	27.5 %
Non Scholastic	-	-	-	-	-		5	5	12.5 %
Total	10	10	5	5	5	35	5	40	100 %

End Semester - UG

Levels	Section A (i) 5 Mks.	Section A (ii) 5 Mks	Section B 8 Mks.	Section C 12 Mks	Section D 20 Mks.	Section E 10 Mks.	Total 60Mks.	

K1	5	5	-	4	-	-	14	23.33 %
K2	-	-	8	4	-	-	12	20 %
K3	-	-	-	-	20	-	20	33.33 %
K4	-	-	-	4	-	10	14	23.34 %
Total	5	5	8	12	20	10	60	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

SCHOLASTIC					NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

UG CIA Components

Nos

C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Quiz	2 *	-	5 Mks
C6	-	Attendance		-	5 Mks

The best out of two will be taken into account

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand the short cut methods.	K1& K2	PSO1& PSO3
CO 2	Apply general mathematical techniques.	K2 & K3	PSO1& PSO3
CO 3	Develop their critical thinking.	K2 & K3	PSO1& PSO3
CO 4	Recall the formulas.	K1& K2	PSO1& PSO2
CO 5	Solve the sums by applying shortcut methods with time management.	K2 & K3	PSO8

Mapping of COs with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8

CO1	**3**	**1**	**3**	**2**	**2**	**1**	**1**	**1**
CO2	**3**	**1**	**3**	**2**	**2**	**2**	**2**	**1**
CO3	**3**	**1**	**3**	**2**	**2**	**1**	**2**	**2**
CO4	**3**	**3**	**2**	**1**	**2**	**2**	**2**	**2**
CO5	**1**	**1**	**1**	**1**	**1**	**2**	**1**	**3**

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	**3**	**1**	**1**	**1**
CO2	**1**	**1**	**3**	**1**
CO3	**1**	**2**	**1**	**3**
CO4	**1**	**1**	**1**	**1**
CO5	**1**	**1**	**1**	**1**

Note: ♦ Strongly Correlated – **3** ♦ModeratelyCorrelated – **2**

♦WeaklyCorrelated -**1**

COURSE DESIGNER:

2. **Staff Name: Dr. V. JANE VARAMANI SULEKHA**

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

OLD SYLLABUS

Changes

5%

III B.Sc.

SEMESTER –I

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	21I6ME3	CLOUD TECHNOLOGY	Lecture	5	5

COURSE DESCRIPTION

This course facilitates the students to understand, analyze the various applications of cloud tool and also provide solutions for cloud security and storage.

COURSE OBJECTIVES

To impart the knowledge about the Computations done in cloud, its architecture and to build their own cloud.

UNITS

UNIT –I UNDERSTANDING CLOUD COMPUTING (15HRS.)

Origin and Influence- Basic concepts and terminology-goals and benefits-Risks and challenges.**FUNDAMENTAL CONCEPTS AND MODELS**: Roles and Boundaries-Cloud Characteristics-**Cloud Delivery Models (Self Study).**

UNIT –II CLOUD ENABLING TECHNOLOGY (15 HRS.)

Broad band Network and Internet Architecture-Data center Technology-Virtualization Technology-Web Technology-Multitenant Technology.

FUNDAMENTAL CLOUD SECURITY: Basic Terms and concepts-Threat Agents-Cloud Security Threats.

UNIT –III CLOUD COMPUTING ARCHITECTURE (15 HRS.)

Cloud Infrastructure Mechanism: Virtual server-cloud storage devices-cloud usage monitor-**Specialized Cloud Mechanism:**AutomatedSaling Listener – Load balancer – SLA monitor – Pay Per Use Monitor – Audit Monitor - Hypervisor.

UNIT –IV Introduction of Grid Computing: (15 HRS.)

Introduction of Grid Computing – Grid Computing Definition – Scope of Grid Computing – Benefits of Grid Computing – **Grid terms and Concepts (Self Study) -** Distributed grid Management.

UNIT –V Applications (15 HRS.)

Grid Computing Organizations and their rules – **The Road to Grid Computing(Self Study)**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)

Virtual server-cloud storage devices-Open Grid Service Architecture.

TEXT BOOK:

1. Erl, Thomas, Ricardo Puttini, and ZaighamMahmood. Cloud computing: concepts, technology, & architecture. Pearson Education, 2013.CHAPTER: 3.1 -3.4,4.1-4.3,5.1-5.6,6.1-6.3,7.2-7.4,8.1-8.7.
2. Grid Computing -Chithra SAMS PUBLISHERS ,2010.

   CHAPTER:1.1-1.6,2.1-2.2,3.1-3.4

REFERENCES:

1. Buyya, Rajkumar, James Broberg, and Andrzej M. Goscinski, eds. Cloud computing: Principles and paradigms. Vol. 87.John Wiley & Sons, 2010.

2. Rhoton, John. "Cloud Computing Explained: Implementation Handbook for Enterprises. 2009." Recursive Limited.
3. Linthicum, David S. Cloud computing and SOA convergence in your enterprise: a step-by-step guide. Pearson Education, 2009.

OPEN EDUCATIONAL RESOURCES :

1. Learn Cloud Computing Tutorial - Javatpoint

   https://www.javatpoint.com/cloud-computing-tutorial

2. Cloud Computing Tutorial For Beginners

   https://www.guru99.com/cloud-computing-for-beginners.html

3. Grid Computing

   https://www.javatpoint.com/grid-computing

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT – I UNDERSTANDINGCLOUDCOMPUTING				
1.1	Origin and Influence- Basic concepts and terminology.	4	Chalk & Talk	Black Board
1.2	goals and benefits-Risks and challenges.	4	Chalk & Talk	Black Board
1.3	Roles and Boundaries-Cloud Characteristics	4	Lecture	PPT& White board
1.4	Cloud Delivery Models (Self	2	Discussion	Black Board

	Study).			
UNIT – IICLOUDENABLINGTECHNOLOGY				
2.1	Broad band Network and Internet Architecture-	3	Chalk & Talk	Black Board
2.2	Data center Technology-Virtualization Technology-	3	Chalk & Talk	Black Board
2.3	Web Technology-Multitenant Technology.	4	Lecture	PPT& White board
2.4	Basic Terms and concepts-Threat Agents.	2	Lecture	Smart Board
2.5	Cloud Security Threats.	2	Discussion	Black Board
CLOUD COMPUTING ARCHITECTURE				
3.1	Cloud Infrastructure Mechanism: Virtual server-cloud storage devices	3	Chalk & Talk	Black Board
3.2	cloud usage monitor-	3	Chalk & Talk	Black Board
3.3	Specialized Cloud Mechanism: Automated Saling Listener	2	Lecture	PPT& White board
3.4	– Load balancer – SLA monitor –	2	Lecture	Smart Board

3.5	Pay Per Use Monitor	2	Chalk & Talk	Black Board
3.6	Audit Monitor - Hypervisor.	2	Discussion	Black Board
UNIT – IV INTRODUCTION OF GRID COMPUTING:				
4.1	Introduction of Grid Computing	2	Chalk & Talk	Black Board
4.2	Grid Computing Definition – Scope of Grid Computing –	1	Chalk &Talk	Black Board
4.3	Benefits of Grid Computing – Grid terms and Concepts (Self Study)- Distributed grid Management.	2	Chalk & Talk	Black Board
UNIT – V Grid Computing Initiatives & Applications				
5.1	Grid Computing Organizations and their rules	3	Chalk & Talk	Black Board
5.2	The Road to Grid Computing (Self Study)	3	Chalk & Talk	Black Board
5.3	Grid Architecture – Grid Topologies	2	Lecture	PPT& White board
5.4	Merging the resources	2	Lecture	Smart Board
5.5	Resources state management	2	Discussion	Black Board

	using Grid services.			
UNIT –6 DYNAMISM				
6.1	Virtual server-cloud storage devices	2	Discussion	Black Board

Levels	C1	C2	C3	C4	Total Scholastic Marks	Non Scholastic Marks C5	CIA Total	% of Assessment
	Session - wise Average 5 Mks.	Better of W1, W2 5 Mks	M1+M2 5+5=10 Mks.	MID-SEM TEST 15 Mks	35 Mks.	5 Mks.	40Mks.	
K1	**5**	**-**	**-**	**2 ½**	**7.5**	-	**7.5**	18.75 %
K2	**-**	**5**	**4**	**2 ½**	**11.5**	-	**11.5**	28.75 %
K3	**-**	**-**	**3**	**5**	**8**	-	**8**	20 %
K4	**-**	**-**	**3**	**5**	**8**	-	**8**	20 %
Non Scholastic	**-**	**-**	**-**	-		**5**	**5**	12.5 %
Total	**5**	**5**	**10**	**15**	**35**	**5**	**40**	**100 %**

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC				NON – SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	CIA	ESE	Total
5	10	15	5	5	40	60	100

C1 – Average of Two Session Wise Tests

C2 – Average of Two Monthly Tests

C3 - Mid Sem Test

C4 – Best of Two Weekly Tests

C5 – Non - Scholastic

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand fundamental concepts of cloud service and deployment models.	K1& K2	PSO1& PSO2
CO 2	Identify the importance of virtualization along with their technologies.	K1& K2	PSO3
CO 3	Analyze different cloud computing Services.	K3 & K4	PSO6

CO 4	Analyze the Basic and Components of Grid.	K3 & K4	PSO6
CO 5	Illustrate different Grid computing Application.	K3 & K4	PSO6, PSO7 & PSO8

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	1	1	3	2	2	2	2	1
CO3	1	2	3	3	2	3	2	2
CO4	2	2	3	2	2	3	2	2
CO5	1	2	1	1	1	3	3	3

Mapping of COs with Pos

CO/ PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	1	1	1	1	1	1
CO2	1	3	1	1	2	1	1
CO3	1	2	1	1	1	3	1
CO4	1	1	1	1	3	1	3
CO5	1	1	1	1	1	3	1

Note: ♦ Strongly Correlated – **3** ♦ModeratelyCorrelated – **2**
♦WeaklyCorrelated -**1**

COURSE DESIGNER:

1. **Staff Name: Mrs. T. LEENA PREMA KUMARI**

Forwarded By

V. Mageshwari

HOD'S Signature

& Name

NEW SYLLABUS

Addition

5%

III B.Sc.

SEMESTER –I

For those who joined in 2021 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	22I6ME3	CLOUD TECHNOLOGY	Lecture	5	5

COURSE DESCRIPTION

This course facilitates the students to understand, analyze the various applications of cloud tool and also provide solutions for cloud security and storage.

COURSE OBJECTIVES

To impart the knowledge about the Computations done in cloud, its architecture and to build their own cloud.

UNITS

UNIT –I UNDERSTANDING CLOUD COMPUTING (15HRS.)

Origin and Influence- Basic concepts and terminology-goals and benefits-Risks and challenges.**FUNDAMENTAL CONCEPTS AND MODELS**: Roles and Boundaries-Cloud Characteristics-**Cloud Delivery Models (Self Study).**

UNIT –II CLOUD ENABLING TECHNOLOGY (15 HRS.)

Broad band Network and Internet Architecture-Data center Technology-Virtualization Technology-Web Technology-Multitenant Technology.

FUNDAMENTAL CLOUD SECURITY: Basic Terms and concepts-Threat Agents-Cloud Security Threats.

UNIT –III CLOUD COMPUTING ARCHITECTURE (15 HRS.)

Cloud Infrastructure Mechanism: Virtual server-cloud storage devices-cloud usage monitor-**Specialized Cloud Mechanism:**AutomatedSaling Listener – Load balancer – SLA monitor – Pay Per Use Monitor – Audit Monitor - Hypervisor.

UNIT –IV Introduction of Grid Computing: (15 HRS.)

Introduction of Grid Computing – Grid Computing Definition – Scope of Grid Computing – Benefits of Grid Computing – **Grid terms and Concepts (Self Study) -** Distributed grid Management.

UNIT –V Grid Computing Initiatives & Applications (15 HRS.)

Grid Computing Organizations and their rules – **The Road to Grid Computing(Self Study)** – Grid Architecture – Grid Topologies – Merging the resources – Resources state management using Grid services.

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)

Virtual server-cloud storage devices-Open Grid Service Architecture.

TEXT BOOK:

3. Erl, Thomas, Ricardo Puttini, and ZaighamMahmood. Cloud computing: concepts, technology, & architecture. Pearson Education, 2013.CHAPTER: 3.1 -3.4,4.1-4.3,5.1-5.6,6.1-6.3,7.2-7.4,8.1-8.7.
4. Grid Computing -Chithra SAMS PUBLISHERS ,2010.

   CHAPTER:1.1-1.6,2.1-2.2,3.1-3.4

REFERENCES:

4. Buyya, Rajkumar, James Broberg, and Andrzej M. Goscinski, eds. Cloud computing: Principles and paradigms. Vol. 87.John Wiley & Sons, 2010.

5. Rhoton, John. "Cloud Computing Explained: Implementation Handbook for Enterprises. 2009." Recursive Limited.
6. Linthicum, David S. Cloud computing and SOA convergence in your enterprise: a step-by-step guide. Pearson Education, 2009.

OPEN EDUCATIONAL RESOURCES :

4. Learn Cloud Computing Tutorial - Javatpoint

   https://www.javatpoint.com/cloud-computing-tutorial

5. Cloud Computing Tutorial For Beginners

   https://www.guru99.com/cloud-computing-for-beginners.html

6. Grid Computing

   https://www.javatpoint.com/grid-computing

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT – I UNDERSTANDINGCLOUDCOMPUTING				
1.1	Origin and Influence- Basic concepts and terminology.	4	Chalk & Talk	Black Board
1.2	goals and benefits-Risks and challenges.	4	Chalk & Talk	Black Board
1.3	Roles and Boundaries-Cloud Characteristics	4	Lecture	PPT& White board
1.4	Cloud Delivery Models (Self	2	Discussion	Black Board

	Study).			
UNIT – IICLOUDENABLINGTECHNOLOGY				
2.1	Broad band Network and Internet Architecture-	3	Chalk & Talk	Black Board
2.2	Data center Technology-Virtualization Technology-	3	Chalk & Talk	Black Board
2.3	Web Technology-Multitenant Technology.	4	Lecture	PPT& White board
2.4	Basic Terms and concepts-Threat Agents.	2	Lecture	Smart Board
2.5	Cloud Security Threats.	2	Discussion	Black Board
CLOUD COMPUTING ARCHITECTURE				
3.1	Cloud Infrastructure Mechanism: Virtual server-cloud storage devices	3	Chalk & Talk	Black Board
3.2	cloud usage monitor-	3	Chalk & Talk	Black Board
3.3	Specialized Cloud Mechanism: Automated Saling Listener	2	Lecture	PPT& White board
3.4	– Load balancer – SLA monitor –	2	Lecture	Smart Board

3.5	Pay Per Use Monitor	2	Chalk & Talk	Black Board
3.6	Audit Monitor - Hypervisor.	2	Discussion	Black Board
UNIT – IV INTRODUCTION OF GRID COMPUTING:				
4.1	Introduction of Grid Computing	2	Chalk & Talk	Black Board
4.2	Grid Computing Definition – Scope of Grid Computing –	1	Chalk &Talk	Black Board
4.3	Benefits of Grid Computing – Grid terms and Concepts (Self Study)- Distributed grid Management.	2	Chalk & Talk	Black Board
UNIT – V Grid Computing Initiatives & Applications				
5.1	Grid Computing Organizations and their rules	3	Chalk & Talk	Black Board
5.2	The Road to Grid Computing (Self Study)	3	Chalk & Talk	Black Board
5.3	Grid Architecture – Grid Topologies	2	Lecture	PPT& White board
5.4	Merging the resources	2	Lecture	Smart Board
5.5	Resources state management	2	Discussion	Black Board

	using Grid services.			
UNIT –6 DYNAMISM				
6.1	Virtual server-cloud storage devices	2	Discussion	Black Board

Levels	C1	C2	C3	C4	Total Scholastic Marks	Non Scholastic Marks C5	CIA Total	% of Assessment
	Session - wise Average 5 Mks.	Better of W1, W2 5 Mks	M1+M2 5+5=10 Mks.	MID-SEM TEST 15 Mks	35 Mks.	5 Mks.	40Mks.	
K1	**5**	**-**	**-**	**2 ½**	**7.5**	-	**7.5**	18.75 %
K2	**-**	**5**	**4**	**2 ½**	**11.5**	-	**11.5**	28.75 %
K3	**-**	**-**	**3**	**5**	**8**	-	**8**	20 %
K4	**-**	**-**	**3**	**5**	**8**	-	**8**	20 %
Non Scholastic	**-**	**-**	**-**	-		**5**	**5**	12.5 %
Total	**5**	**5**	**10**	**15**	**35**	**5**	**40**	**100 %**

CIA	
Scholastic	**35**
Non Scholastic	**5**
	40

EVALUATION PATTERN

SCHOLASTIC				NON – SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	CIA	ESE	Total
5	10	15	5	5	40	60	100

C1 – Average of Two Session Wise Tests

C2 – Average of Two Monthly Tests

C3 - Mid Sem Test

C4 – Best of Two Weekly Tests

C5 – Non - Scholastic

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand fundamental concepts of cloud service and deployment models.	K1& K2	PSO1& PSO2
CO 2	Identify the importance of virtualization along with their technologies.	K1& K2	PSO3
CO 3	Analyze different cloud computing Services.	K3 & K4	PSO6

CO 4	Analyze the Basic and Components of Grid.	K3 & K4	PSO6
CO 5	Illustrate different Grid computing Application.	K3 & K4	PSO6, PSO7 & PSO8

Mapping COs Consistency with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	1	1	3	2	2	2	2	1
CO3	1	2	3	3	2	3	2	2
CO4	2	2	3	2	2	3	2	2
CO5	1	2	1	1	1	3	3	3

Mapping of COs with Pos

CO/ PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	3	1	1	1	1	1	1
CO2	1	3	1	1	2	1	1
CO3	1	2	1	1	1	3	1
CO4	1	1	1	1	3	1	3
CO5	1	1	1	1	1	3	1

Note: ♦ Strongly Correlated – **3** ♦ModeratelyCorrelated – **2**
♦WeaklyCorrelated -**1**

COURSE DESIGNER:

2. Staff Name: Mrs. T. LEENA PREMA KUMARI

V. Mageshwari

Changes

5%

III B.Sc.

SEMESTER –VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	21I6ME4	MOBILE COMMUNICATION	Lecture	5	5

COURSE DESCRIPTION

This course gives the ability to acquire the knowledge about the technologies in mobile computing and its security issues.

COURSE OBJECTIVES

To obtain knowledge on Mobile Computing Concepts and emerging technologies and applications.

UNITS

UNIT –I INTRODUCTION (15 HRS.)

Mobile Computing – Dialogue Control – Networks – Middleware & Gateways - MOBILE COMPUTING ARCHITECTURE: History of computers and Internet – Architecture for mobile computing – **Three-tier architecture (Self Study).**

UNIT –II MOBILE COMPUTING THROUGH TELEPHONY (15 HRS.)

Evaluation of telephony – Multiple access procedures – Satellite Communication Systems. – EMERGING TECHNOLOGIES: Introduction – **Blue Tooth(Self Study)** – RFID – WiMAX – Mobile IP - Wire Less - LAN

UNIT –III GSM & GPRS (15 HRS.)

Global System for mobile communications – GSM Architecture – GSM Entities – Call routing in GSM – PLMN Interfaces – GSM Addresses and Identifiers – Network Aspects in GSM – GPRS and packet data network – GPRS network architecture – GPRS network operations – Data services in GPRS – Application for GPRS- **Limitations(Self Study).**

UNIT –IV WIRELESS APPLICATION PROTOCOL (15 HRS.)

Introduction – Networks for WAP - WAP Application Environment - MMS- MMS Architecture – Transaction Flows – SMIL – MMS Interconnection, Interoperability and roaming – MMS device Management and configuration - GPRS Application .

UNIT –V CDMA AND SECURITY (15 HRS.)

Spread spectrum technology – CDMA vs. GSM – **Wireless Data(Self Study)** – Third generation networks – Applications on 3G. SECURITY ISSUES IN MOBLIE COMUTING: Information Security – Security Techniques & Algorithms.

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)

Recent Trends in Mobile Computing (Business Intelligence (BI) Mobile Apps, IoT, Non-Removable Battery and Memory).

TEXT BOOK:

1. Talukdar, Asoke K. Mobile Computing, 2E.Tata McGraw-Hill Education, 2010.Chapter 1.1 - 1.6, 2.1, 2.2 - 2.5, 3.1 - 3.3, 4.1 - 4.5, 5.1 - 5.5, 5.7, 7.1 - 7.7, 8.1-8.4,9.1, 9.2, 9.4 - 9.7, 20.1 - 20.3.

REFERENCES:

1. Stüber, Gordon L., and Gordon L. Stèuber.Principles of mobile communication.Vol.2. Norwell, Mass, USA: Kluwer Academic, 1996.
2. Schiller, Jochen H. Mobile communications.Pearson education, 2003.

OPEN EDUCATIONAL RESOURCES :

1. Mobile Communication Tutorial - Javatpoint

https://www.javatpoint.com/mobile-communication-tutorial

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 INTRODUCTION				
1.1	Mobile Computing, Dialogue Control	3	Chalk & Talk	Black Board
1.2	Networks, Middleware & Gateways	3	Lecture	PPT& White board
1.3	MOBILE COMPUTING ARCHITECTURE: History of computers and Internet	3	Lecture	Black Board
1.4	Architecture for mobile computing	3	Chalk & Talk	Black Board
1.5	Three-tier architecture (Self Study)	2	Discussion	Black Board
UNIT -2MOBILE COMPUTING THROUGH TELEPHONY				

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
2.1	Evaluation of telephony	2	Chalk & Talk	Black Board
2.2	Multiple access procedures	3	Chalk & Talk	Black Board
2.3	Satellite Communication Systems	3	Lecture	PPT& White board
2.4	EMERGING TECHNOLOGIES, RFID	2	Lecture	Smart Board
2.5	Blue Tooth (Self Study)	2	Discussion	Google classroom
2.6	WiMAX, Mobile IP	2	Lecture	PPT& White board
UNIT -3 GSM& GPRS				
3.1	Global System for mobile, communications	2	Chalk & Talk	Black Board
3.2	GSM Architecture, GSM Entities	3	Chalk & Talk	Black Board
3.3	Call routing in GSM, PLMN Interfaces	3	Lecture	PPT& White board
3.4	GSM Addresses and Identifiers, Network Aspects in GSM	3	Lecture	Smart Board
3.5	GPRS and packet data network GPRS network architecture	1	Chalk & Talk	Black Board
3.6	GPRS network operations ,Data services in GPRS	2	Discussion	Google classroom

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -4 WIRELESS APPLICATION PROTOCOL & WIRELESS LAN				
4.1	Introduction –WAP –IEEE 802.11 Standards	3	Chalk & Talk	Black Board
4.2	MMS- GPRS Application	3	Chalk & Talk	Black Board
4.3	Wireless LAN: Introduction - Wireless LAN Advantages	3	Lecture	PPT& White board
4.4	Wireless LAN Architecture	2	Lecture	Smart Board
4.5	Mobility in Wireless LAN- Deploying Wireless LAN	2	Discussion	Black Board
4.6	Mobile Adhoc Networks and Sensor networks	1	Discussion	Google classroom
UNIT -5CDMA and SECURITY				
5.1	Spread spectrum technology – CDMA vs. GSM	3	Chalk &Talk	Black Board
5.2	Wireless Data (Self Study) – Third generation networks	2	Chalk & Talk	Black Board
5.3	Applications on 3G	1	Discussion	Google classroom
5.4	Security Issues In Moblie Computing: Information Security	2	Lecture	Smart Board
5.5	Security Techniques & Algorithms.	3	Discussion	Black Board
UNIT –6 DYNAMISM				

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
6.1	Business Intelligence (BI) Mobile Apps	2	Discussion	Black Board
6.2	IoT, Non-Removable Battery and Memory	3	Discussion	Black Board

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand the infrastructure to develop mobile communication systems.	K1& K2	PSO1& PSO2
CO 2	Identify the characteristics of different multiple access techniques in mobile communication.	K1& K2	PSO3
CO 3	Analyse the measures GSM systems and the entire protocol architecture of GSM.	K3 & K4	PSO4
CO 4	Understand the GPRS technologies and architecture for communication using Mobile Devices.	K1& K2	PSO3&PSO4
CO 5	Illustrate the Security issues in	K3 & K4	PSO6, PSO7

	Mobile Computing.		& PSO8

COURSE DESIGNER:

1. **Staff Name: MRS. T. CHARANYA NAGAMMAL**

Forwarded By

HOD'S Signature

& Name

NEW SYLLABUS

Deletion

5%

III B.Sc.

SEMESTER –VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	21I6ME4	MOBILE COMMUNICATION	Lecture	5	5

COURSE DESCRIPTION

This course gives the ability to acquire the knowledge about the technologies in mobile computing and its security issues.

COURSE OBJECTIVES

To obtain knowledge on Mobile Computing Concepts and emerging technologies and applications.

UNITS

UNIT –I INTRODUCTION (15 HRS.)

Mobile Computing – Dialogue Control – Networks – Middleware & Gateways - MOBILE COMPUTING ARCHITECTURE: History of computers and Internet – Architecture for mobile computing – **Three-tier architecture (Self Study).**

UNIT –II MOBILE COMPUTING THROUGH TELEPHONY (15 HRS.)

Evaluation of telephony – Multiple access procedures – Satellite Communication Systems. – EMERGING TECHNOLOGIES: Introduction – **Blue Tooth(Self Study)** – RFID – WiMAX – Mobile IP

UNIT –III GSM & GPRS (15 HRS.)

Global System for mobile communications – GSM Architecture – GSM Entities – Call routing in GSM – PLMN Interfaces – GSM Addresses and Identifiers – Network Aspects in GSM – GPRS and packet data network – GPRS network architecture – GPRS network operations – Data services in GPRS – Application for GPRS- **Limitations(Self Study).**

UNIT –IV WIRELESS APPLICATION PROTOCOL (15 HRS.)

Introduction – Networks for WAP - WAP Application Environment - MMS- MMS Architecture – Transaction Flows – SMIL – MMS Interconnection, Interoperability and roaming – MMS device Management and configuration - GPRS Application .

UNIT –V CDMA AND SECURITY (15 HRS.)

Spread spectrum technology – CDMA vs. GSM – **Wireless Data(Self Study)** – Third generation networks – Applications on 3G. SECURITY ISSUES IN MOBLIE COMUTING: Information Security – Security Techniques & Algorithms.

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)

Recent Trends in Mobile Computing (Business Intelligence (BI) Mobile Apps, IoT, Non-Removable Battery and Memory).

TEXT BOOK:

2. Talukdar, Asoke K. Mobile Computing, 2E.Tata McGraw-Hill Education, 2010.Chapter 1.1 - 1.6, 2.1, 2.2 - 2.5, 3.1 - 3.3, 4.1 - 4.5, 5.1 - 5.5, 5.7, 7.1 - 7.7, 8.1-8.4,9.1, 9.2, 9.4 - 9.7, 20.1 - 20.3.

REFERENCES:

3. Stüber, Gordon L., and Gordon L. Stèuber.Principles of mobile communication.Vol.2. Norwell, Mass, USA: Kluwer Academic, 1996.
4. Schiller, Jochen H. Mobile communications.Pearson education, 2003.

OPEN EDUCATIONAL RESOURCES :

2. Mobile Communication Tutorial - Javatpoint

https://www.javatpoint.com/mobile-communication-tutorial

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 INTRODUCTION				
1.1	Mobile Computing, Dialogue Control	3	Chalk & Talk	Black Board
1.2	Networks, Middleware & Gateways	3	Lecture	PPT& White board
1.3	MOBILE COMPUTING ARCHITECTURE: History of computers and Internet	3	Lecture	Black Board
1.4	Architecture for mobile computing	3	Chalk & Talk	Black Board
1.5	Three-tier architecture (Self Study)	2	Discussion	Black Board
UNIT -2MOBILE COMPUTING THROUGH TELEPHONY				

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
2.1	Evaluation of telephony	2	Chalk & Talk	Black Board
2.2	Multiple access procedures	3	Chalk & Talk	Black Board
2.3	Satellite Communication Systems	3	Lecture	PPT& White board
2.4	EMERGING TECHNOLOGIES, RFID	2	Lecture	Smart Board
2.5	Blue Tooth (Self Study)	2	Discussion	Google classroom
2.6	WiMAX, Mobile IP	2	Lecture	PPT& White board
UNIT -3 GSM& GPRS				
3.1	Global System for mobile, communications	2	Chalk & Talk	Black Board
3.2	GSM Architecture, GSM Entities	3	Chalk & Talk	Black Board
3.3	Call routing in GSM, PLMN Interfaces	3	Lecture	PPT& White board
3.4	GSM Addresses and Identifiers, Network Aspects in GSM	3	Lecture	Smart Board
3.5	GPRS and packet data network GPRS network architecture	1	Chalk & Talk	Black Board
3.6	GPRS network operations ,Data services in GPRS	2	Discussion	Google classroom

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -4 WIRELESS APPLICATION PROTOCOL & WIRELESS LAN				
4.1	Introduction –WAP –IEEE 802.11 Standards	3	Chalk & Talk	Black Board
4.2	MMS- GPRS Application	3	Chalk & Talk	Black Board
4.3	Wireless LAN: Introduction - Wireless LAN Advantages	3	Lecture	PPT& White board
4.4	Wireless LAN Architecture	2	Lecture	Smart Board
4.5	Mobility in Wireless LAN- Deploying Wireless LAN	2	Discussion	Black Board
4.6	Mobile Adhoc Networks and Sensor networks	1	Discussion	Google classroom
UNIT -5CDMA and SECURITY				
5.1	Spread spectrum technology – CDMA vs. GSM	3	Chalk &Talk	Black Board
5.2	Wireless Data (Self Study) – Third generation networks	2	Chalk & Talk	Black Board
5.3	Applications on 3G	1	Discussion	Google classroom
5.4	Security Issues In Moblie Computing: Information Security	2	Lecture	Smart Board
5.5	Security Techniques & Algorithms.	3	Discussion	Black Board
UNIT –6 DYNAMISM				

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
6.1	Business Intelligence (BI) Mobile Apps	2	Discussion	Black Board
6.2	IoT, Non-Removable Battery and Memory	3	Discussion	Black Board

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
CO 1	Understand the infrastructure to develop mobile communication systems.	K1& K2	PSO1& PSO2
CO 2	Identify the characteristics of different multiple access techniques in mobile communication.	K1& K2	PSO3
CO 3	Analyse the measures GSM systems and the entire protocol architecture of GSM.	K3 & K4	PSO4
CO 4	Understand the GPRS technologies and architecture for communication using Mobile Devices.	K1& K2	PSO3&PSO4
CO 5	Illustrate the Security issues in	K3 & K4	PSO6, PSO7

	Mobile Computing.		& PSO8

COURSE DESIGNER:

2. **Staff Name: MRS. T. CHARANYA NAGAMMAL**

Forwarded By

HOD'S Signature

& Name

OLD SYLLABUS

Changes

5%

III B.Sc. Information Technology

SEMESTER – VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19I6ME5	INFORMATION STORAGE MANAGEMENT	Lecture	5	5

COURSE DESCRIPTION

This course provides a comprehensive understanding of the various storage infrastructure components in classic and virtual environments. It enables the students to make informed decisions in an increasingly complex IT environment.

COURSE OBJECTIVES

To impart the comprehensive understanding of all segments of Storage Technologies.

UNITS

UNIT –I STORAGE SYSTEM (14HRS.)

Introduction to Information Storage and Management: Information storage – Evolution of Storage Architecture – Data Center Infrastructure –

Virtualization and Cloud Computing – Data Center Environment: Application – DBMS – Host – **Connectivity (Self Study).**

UNIT –II DATA PROTECTION (14 HRS.)

RAID: RAID Implementation methods – RAID Array Components – RAID Techniques – RAI levels.Intelligent Storage System: Components of an Intelligent Storage System – **Storage Provisioning (Self Study).**

UNIT –III STORAGE NETWORKING TECHNOLOGIES (14 HRS.)

Fibre Channel Storage area Networks: Fibre Channel: Overview - The SAN and Its Evolution – Components of FC SAN – Network Attached Storage: General Purpose Servers Vs NAS Devices – Benefits of NAS – **File System and Network File Sharing (Self Study)**– Components of NAS.

UNIT –IV BACKUP, ARCHIVE AND REPLICATION (14 HRS.)

Backup and Archive: Backup Purpose – Backup Considerations – Backup Granularity - Recovery Considerations – Backup Methods – Backup Architecture – Backup and Restore Operations – **Data Archive(Self Study)** – Archiving Solution Architecture

UNIT –V SECURING AND MANAGING STORAGE INFRASTRUCTURE

(14 HRS.)

Securing the Storage Infrastructure: Information Security Framework – Risk Triad- Storage Security Domains- Managing the Storage infrastructure: **Monitoring the Storage Infrastructure(Self Study).**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)

Latest storage device (Cloud, SSD(solid-state drive), NVMe (Non-Volatile Memory Express).

TEXT BOOK:

1. Somasundaram, Gnanasundaram, and AlokShrivastava, eds. Information storage and management: storing, managing, and protecting digital information in classic, virtualized, and cloud environments. John Wiley & Sons, 2012.Chapters - 1.1 – 1.4, 2.1 – 2.4, 3.1-3.4, 4.1- 4.2, 5.1-5.3, 7.1-7.4, 10.1 – 10.7, 10.13, 10.14, 14.1 – 14.3, 15.1

REFERENCES:

1. Robert Spalding, "Storage Networks " The Complete Reference, Tata McGraw Hill, 2003
2. Marc Fairley, "Building Storage Networks", Tata McGraw Hill, 2001

WEB REFERNCES :

1. Management Information System Tutorial

   https://www.tutorialspoint.com/management_information_system/index.htm

COURSE CONTENTS & LECTURE SCHEDULE:

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
UNIT -1 STORAGE SYSYEM				
1.1	Introduction to Information Storage and Management: Information storage	3	Chalk & Talk	Black Board
1.2	Evolution of Storage Architecture	3	Chalk & Talk	LCD
1.3	Data Center Infrastructure, Virtualization and Cloud Computing	3	Lecture	PPT& White board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
1.4	Data Center Environment: Application DBMS, Host	3	Lecture	Smart Board
1.5	Connectivity (Self Study)	2	Discussion	Black Board
UNIT -2 DATA PROTECTION				
2.1	RAID: RAID Implementation methods, RAID Array Components	4	Lecture	PPT& White board
2.2	RAID Techniques – RAID levels	4	Lecture	PPT& White board
2.3	Intelligent Storage System: Components of an Intelligent Storage System	4	Discussion	Black Board
2.4	Storage Provisioning (Self Study)	2	Discussion	Black Board
UNIT -3 STORAGE NETWORKING TECHNOLOGIES				
3.1	Fibre Channel Storage area Networks: Fibre Channel-Overview	2	Chalk & Talk	Black Board
3.2	The SAN and Its Evolution	2	Discussion	Google classroom
3.3	Components of FC SAN	2	Lecture	Black Board
3.4	Network Attached Storage: General Purpose Servers Vs NAS Devices	3	Lecture	PPT& White board
3.5	Benefits of NAS	2	Chalk & Talk	Black Board
3.6	File System and Network File Sharing (Self Study)	1	Discussion	Google classroom
3.7	Components of NAS	2	Chalk &	Black

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
			Talk	Board
UNIT – 4 BACKUP, ARCHIVE AND REPLICATION				
4.1	Backup and Archive: Backup Purpose	2	Lecture	Black Board
4.2	Backup Considerations, Backup Granularity	2	Chalk & Talk	Black Board
4.3	Recovery Considerations, Backup Methods	2	Lecture	Black Board
4.4	Backup Architecture	2	Chalk & Talk	Black Board
4.5	Backup and Restore Operations	2	Discussion	Google classroom
4.6	Data Archive (Self Study)	2	Lecture	PPT& White board
4.7	Archiving Solution Architecture	2	Discussion	Google classroom
UNIT -5 SECURING AND MANAGING STORAGE INFRASTRUCTURE				
5.1	Securing the Storage Infrastructure: Information Security Framework	5	Lecture	Black Board
5.2	Risk Triad- Storage Security Domains	5	Lecture	PPT& White board
5.3	Managing the Storage infrastructure	3	Chalk & Talk	Black Board
5.4	Monitoring the Storage Infrastructure (Self Study)	1	Discussion	Google classroom
UNIT –6 DYNAMISM				
6.1	Cloud, SSD(solid-state drive)	2	Discussion	Black Board

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
6.2	NVMe (Non-Volatile Memory Express	3	Discussion	Black Board

INTERNAL - UG

Levels	C1	C2	C3	C4	C5	Total Scholastic Marks	Non Scholastic Marks C6	CIA Total	% of Assessment
	T1 10 Mks.	T2 10 Mks.	Quiz 5 Mks.	Assignment 5 Mks	OBT/PPT 5 Mks	35 Mks.	5 Mks.	40Mks.	
K1	**2**	**2**	**-**	**-**	**-**	**4**	-	**4**	10 %
K2	**2**	**2**	**5**	**-**	**-**	**9**	-	**9**	22.5 %
K3	**3**	**3**	**-**	**-**	**5**	**11**	-	**11**	27.5 %
K4	**3**	**3**	**-**	**5**	**-**	**11**	-	**11**	27.5 %
Non Scholastic	**-**	**-**	**-**	**-**	-		**5**	**5**	12.5 %
Total	**10**	**10**	**5**	**5**	**5**	**35**	**5**	**40**	**100 %**

End Semester - UG

Levels	Section A (i) 5 Mks.	Section A (ii) 5 Mks	Section B 8 Mks.	Section C 12 Mks	Section D 20 Mks.	Section E 10 Mks.	Total 60Mks.	
K1	**5**	**5**	**-**	**4**	**-**	-	**14**	23.33 %
K2	**-**	**-**	**8**	**4**	**-**	-	**12**	20 %
K3	**-**	**-**	**-**	**-**	**20**	-	**20**	33.33 %
K4	**-**	**-**	**-**	**4**	**-**	10	**14**	23.34 %

Total	5	5	8	12	20	10	60	100 %

CIA	
Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

SCHOLASTIC					NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
10	10	5	5	5	5	40	60	100

UG CIA Components

			Nos		
C1	-	Test (CIA 1)	1	-	10 Mks
C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Quiz	2 *	-	5 Mks
C6	-	Attendance		-	5 Mks

**** The best out of two will be taken into account***

COURSE OUTCOMES

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

NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING	PSOs ADDRESSED

		TO REVISED BLOOM'S TAXONOMY)	
CO 1	Know the concepts of Storage and Data structure Environment based on growth and challenges in IT.	K1& K2	PSO1& PSO2
CO 2	Understand data protection by using related and recent techniques.	K1& K2	PSO1& PSO2
CO 3	Identify the parameters of managing and monitoring the storage infrastructure and manage the solutions.	K1, K2 & K3	PSo3 & PSO4
CO 4	Know backup and archival data in both classic and virtualized environment.	K1& K2	PSO6
CO 5	Analyze, Monitoring and managing the storage infrastructure in cloud environments.	K3& K4	PSO7 & PSO8

Mapping of C0s with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	3	3	2	2	2	1	1	1
CO2	2	3	2	2	2	2	2	1
CO3	2	2	2	3	2	2	2	2
CO4	2	2	3	2	2	2	2	2
CO5	2	2	2	2	2	3	1	1

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1

CO2	**1**	**1**	**3**	**1**
CO3	**1**	**2**	**1**	**3**
CO4	**1**	**1**	**1**	**1**
CO5	**1**	**1**	**1**	**1**

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: MRS. T. CHARANYA NAGAMMAL**

Forwarded By

V. Mageshwari

HOD'S Signature
& Name

NEW SYLLABUS

Addition

5%

III B.Sc. Information Technology

SEMESTER – VI

For those who joined in 2019 onwards

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS

PROGRAMME CODE	COURSE CODE	COURSE TITLE	CATEGORY	HRS/WEEK	CREDITS
USIT	19I6ME5	INFORMATION STORAGE MANAGEMENT	Lecture	5	5

COURSE DESCRIPTION

This course provides a comprehensive understanding of the various storage infrastructure components in classic and virtual environments. It enables the students to make informed decisions in an increasingly complex IT environment.

COURSE OBJECTIVES

To impart the comprehensive understanding of all segments of Storage Technologies.

UNITS

UNIT –I STORAGE SYSTEM (14HRS.)

Introduction to Information Storage and Management: Information storage – Evolution of Storage Architecture – Data Center Infrastructure – Virtualization and Cloud Computing – Data Center Environment: Application – DBMS – Host – Storage – computing power, application connections - **Connectivity (Self Study).**

UNIT –II DATA PROTECTION (14 HRS.)

RAID: RAID Implementation methods – RAID Array Components – RAID Techniques – RAI levels.Intelligent Storage System: Components of an Intelligent Storage System – **Storage Provisioning (Self Study).**

UNIT –III STORAGE NETWORKING TECHNOLOGIES (14 HRS.)

Fibre Channel Storage area Networks: Fibre Channel: Overview - The SAN and Its Evolution – Components of FC SAN – Network Attached Storage: General Purpose Servers Vs NAS Devices – Benefits of NAS – **File System and Network File Sharing (Self Study)**– Components of NAS.

UNIT –IV BACKUP, ARCHIVE AND REPLICATION (14 HRS.)

Backup and Archive: Backup Purpose – Backup Considerations – Backup Granularity - Recovery Considerations – Backup Methods – Backup Architecture – Backup and Restore Operations – **Data Archive(Self Study)** – Archiving Solution Architecture

UNIT –V SECURING AND MANAGING STORAGE INFRASTRUCTURE

(14 HRS.)

Securing the Storage Infrastructure: Information Security Framework – Risk Triad- Storage Security Domains-Security implementation in storage networking- Managing the Storage infrastructure: **Monitoring the Storage Infrastructure(Self Study).**

UNIT –VI DYNAMISM (Evaluation Pattern-CIA only) (5 HRS.)

Latest storage device (Cloud, SSD(solid-state drive), NVMe (Non-Volatile Memory Express).

TEXT BOOK:

2. Somasundaram, Gnanasundaram, and AlokShrivastava, eds. Information storage and management: storing, managing, and protecting digital information in classic, virtualized, and cloud environments. John Wiley & Sons, 2012.Chapters - 1.1 – 1.4, 2.1 – 2.4, 3.1-3.4, 4.1- 4.2, 5.1-5.3, 7.1-7.4, 10.1 – 10.7, 10.13, 10.14, 14.1 – 14.3, 15.1

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COURSE CONTENTS & LECTURE SCHEDULE:

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1.2	Evolution of Storage Architecture	3	Chalk & Talk	LCD
1.3	Data Center Infrastructure, Virtualization and Cloud Computing	3	Lecture	PPT& White board
1.4	Data Center Environment: Application DBMS, Host	3	Lecture	Smart Board
1.5	Connectivity (Self Study)	2	Discussion	Black Board
UNIT -2 DATA PROTECTION				
2.1	RAID: RAID Implementation methods, RAID Array Components	4	Lecture	PPT& White board
2.2	RAID Techniques – RAID levels	4	Lecture	PPT& White

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
				board
2.3	Intelligent Storage System: Components of an Intelligent Storage System	4	Discussion	Black Board
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3.2	The SAN and Its Evolution	2	Discussion	Google classroom
3.3	Components of FC SAN	2	Lecture	Black Board
3.4	Network Attached Storage: General Purpose Servers Vs NAS Devices	3	Lecture	PPT& White board
3.5	Benefits of NAS	2	Chalk & Talk	Black Board
3.6	File System and Network File Sharing (Self Study)	1	Discussion	Google classroom
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4.1	Backup and Archive: Backup Purpose	2	Lecture	Black Board
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4.3	Recovery Considerations, Backup Methods	2	Lecture	Black Board
4.4	Backup Architecture	2	Chalk &	Black

Module No.	Topic	No. of Lectures	Teaching Pedagogy	Teaching Aids
			Talk	Board
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5.2	Risk Triad- Storage Security Domains	5	Lecture	PPT& White board
5.3	Managing the Storage infrastructure	3	Chalk & Talk	Black Board
5.4	Monitoring the Storage Infrastructure (Self Study)	1	Discussion	Google classroom
UNIT –6 DYNAMISM				
6.1	Cloud, SSD(solid-state drive)	2	Discussion	Black Board
6.2	NVMe (Non-Volatile Memory Express	3	Discussion	Black Board

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Non Scholastic	**-**	**-**	**-**	**-**	-		**5**	**5**	12.5 %
Total	**10**	**10**	**5**	**5**	**5**	**35**	**5**	**40**	**100 %**

End Semester - UG

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K2	**-**	**-**	**8**	**4**	**-**	-	**12**	20 %
K3	**-**	**-**	**-**	**-**	**20**	-	**20**	33.33 %
K4	**-**	**-**	**-**	**4**	**-**	10	**14**	23.34 %
Total	**5**	**5**	**8**	**12**	**20**	**10**	**60**	**100 %**

CIA	
Scholastic	35
Non Scholastic	5
	40

EVALUATION PATTERN

SCHOLASTIC					NON - SCHOLASTIC	MARKS		
C1	C2	C3	C4	C5	C6	CIA	ESE	Total
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			Nos		
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C2	-	Test (CIA 2)	1	-	10 Mks
C3	-	Assignment	1	-	5 Mks
C4	-	Open Book Test/PPT	2 *	-	5 Mks
C5	-	Quiz	2 *	-	5 Mks
C6	-	Attendance		-	5 Mks

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COURSE OUTCOMES

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NO.	COURSE OUTCOMES	KNOWLEDGE LEVEL (ACCORDING TO REVISED BLOOM'S TAXONOMY)	PSOs ADDRESSED
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	based on growth and challenges in IT.		
CO 2	Understand data protection by using related and recent techniques.	K1& K2	PSO1& PSO2
CO 3	Identify the parameters of managing and monitoring the storage infrastructure and manage the solutions.	K1, K2 & K3	PSo3 & PSO4
CO 4	Know backup and archival data in both classic and virtualized environment.	K1& K2	PSO6
CO 5	Analyze, Monitoring and managing the storage infrastructure in cloud environments.	K3& K4	PSO7 & PSO8

Mapping of C0s with PSOs

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	**3**	**3**	**2**	**2**	**2**	**1**	**1**	**1**
CO2	**2**	**3**	**2**	**2**	**2**	**2**	**2**	**1**
CO3	**2**	**2**	**2**	**3**	**2**	**2**	**2**	**2**
CO4	**2**	**2**	**3**	**2**	**2**	**2**	**2**	**2**
CO5	**2**	**2**	**2**	**2**	**2**	**3**	**1**	**1**

Mapping of C0s with POs

CO/ PSO	PO1	PO2	PO3	PO4
CO1	3	1	1	1
CO2	1	1	3	1
CO3	1	2	1	3
CO4	1	1	1	1
CO5	1	1	1	1

Note: ♦ Strongly Correlated – **3** ♦ Moderately Correlated – **2**
♦ Weakly Correlated -**1**

COURSE DESIGNER:

1. **Staff Name: MRS. T. CHARANYA NAGAMMAL**

Forwarded By

V. Mageshwari

HOD'S Signature
& Name