DEPARTMENT OF COMPUTER APPLICATIONS

B.C.A. - THIRD YEAR
(2015-2016 REGULATION)

SIXTH SEMESTER

LESSON PLAN

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

FACULTY OF SCIENCE AND HUMANITIES

SRM NAGAR, KATTANKULATHUR – 603 203

Semester	Course Code	Course Title	L	P	C
VI	UCA15601	OBJECT ORIENTED ANALYSIS AND DESIGN	4	4	4+2

UNIT I (15 Hours)

INTRODUCTION TO UML: Importance of Modeling-Principles of Modeling-Object Oriented Modeling -Conceptual Model of the UML-Architecture-Software Development Life Cycle.

UNIT II (15 Hours)

STRUCTURAL MODELING: Classes –Relationships –common Mechanisms-Diagrams.

UNIT -III (15 Hours)

CLASS & OBJECT DIAGRAMS: Terms–Concepts-Modeling Techniques for Class and Object Diagrams.

UNIT-IV (15 Hours)

BEHAVIORAL MODELING: Interactions-Interaction Diagrams –Use cases –Use case Diagrams–Activity Diagrams**.**

UNIT-V (15 Hours)

ARCHITECTURAL MODELING: Component–Deployment–Component Diagrams and Deployment Diagrams.

TEXT BOOK

1. Grady Booch, James Rumbaugh and Ivar Jacobson(2004).

"The Unified Modeling Language User Guide ". Addison Wesley Longman Pvt. Ltd., Singapore,

REFERENCE

1. Grady Booch, James Rumbaugh and Ivar Jacobson(2000),

"The Unified Modeling language Reference manual ". Addison Wesley Longman Pvt. Ltd., Singapore,

LESSON PLAN

Subject Name: OBJECT ORIENTED ANALYSIS AND DESIGN

Subject Code: UCA15601

Unit I: INTRDCTION TO UML:

UNIT I		
Lecture Hour	**Description**	**Reference with chapter**
1	Introduction to UML, importance of modeling	TB, Ch-1
2	Principles of modeling	TB, Ch-1
3	Object Oriented Modeling	TB, Ch-2
4	Overview of UML	TB, Ch-2
5	A conceptual model of the UML: Building blocks of UML	TB, Ch-2
6	Things in the UML: Structural and Behavioral Things	TB, Ch-2
7	Grouping and Annotational Things	TB, Ch-2
8	Relationships in the UML	TB, Ch-2
9	Diagrams in the UML	TB, Ch-2
10	Rules of the UML	TB, Ch-2
11	Common Mechanisms in the UML	TB, Ch-2
12	Extensibility Mechanisms	TB, Ch-2
13	Architecture	TB, Ch-2
14	Software Development Life Cycle: Use Case Driven	TB, Ch-2
15	Architecture – Centric, iterative and incremental	TB, Ch-2

Unit II: STRUCTURAL MODELING:

Classes–Relationships –common Mechanisms–Diagrams.

UNIT II		
Lecture Hour	**Description**	**Reference with chapter**
16	Structural modeling: Classes: Concepts: Classes, attributes, operations	TB:Ch-4
17	Organizing attributes, operations and responsibilities	TB:Ch-4
18	Modeling the vocabulary of a system	TB:Ch-4
19	Modeling the distribution of responsibilities in a system	TB:Ch-4
20	Modeling non software things and primitive things	TB:Ch-4
21	Relationships: Dependency, generalization	TB:Ch-5
22	Association, multiplicity, aggregation and realization	TB:Ch-5
23	Modeling simple dependencies and modeling simple inheritance	TB:Ch-5
24	Modeling structural relationships	TB:Ch-5
25	Common mechanisms: Stereotypes, tagged values and constraints and standard elements	TB:Ch-6
26	Modeling new building blocks, new semantics and new properties	TB:Ch-6
27	Diagrams: Structural Diagrams: Class diagram(Classes, interface and collaboration), Object Diagram(Object)	TB:Ch-7
28	Component, Diagram(Component) and Deployment Diagram(Nodes)	TB:Ch-7
29	Behavioral Diagrams: Use case diagrams and Sequence diagram, Collaboration Diagram and State chart diagram	TB:Ch-7
30	Modeling different views, Modeling level of abstraction and Modeling complex view	TB:Ch-7

Unit III : CLASS & OBJECT DIAGRAMS:

Terms–Concepts-Modeling Techniques for Class and Object Diagrams

UNIT III		
Lecture Hour	**Description**	**Reference with chapter**
31	Class: Concepts	TB:Ch-8
32	Contents: Classes with example	TB:Ch-8
33	Interfaces with example	TB:Ch-8
34	Collaborations with example	TB:Ch-8
35	Dependency with example	TB:Ch-8
36	Generalization with example	TB:Ch-8
37	Association and common uses	TB:Ch-8
38	Modeling simple collaborations	TB:Ch-8
39	Modeling a Logical database schema	TB:Ch-8
40	Forward and reverse engineering	TB:Ch-8
41	Object Diagram: Terms and concepts, contents: Object, links and common uses	TB:Ch-15
42	Modeling object structures	TB:Ch-15
43	Forward and reverse engineering	TB:Ch-15

Unit IV: BEHAVIORAL MODELING:

Interactions-Interaction Diagrams –Use cases–Use case Diagrams–Activity Diagrams**.**

UNIT IV		
Lecture Hour	**Description**	**Reference with chapter**
44	Behavioral modeling: Interactions: Roles, links, messages	TB:Ch-16
45	Actions and sequences	TB:Ch-16
46	Creating well structures algorithm: creation, Modification and destruction	TB:Ch-16
47	Representation	TB:Ch-16
48	Modeling a flow of control	TB:Ch-16
49	Interactions Diagrams: Modeling flow of control by time ordering	TB:Ch-16
50	Modeling flow of control by organization	TB:Ch-16
51	Forward and reverse engineering	TB:Ch-16
52	Use cases: Use cases, actors, include and extend	TB:Ch-16
53	Use cases and flow of events, scenarios and collaboration	TB:Ch-16
54	Organizing use cases	TB:Ch-16
55	Modeling behavior of an element	TB:Ch-16
56	Use Case Diagrams: Modeling the context of a system	TB:Ch-16
57	Modeling the requirements of a system	TB:Ch-16
58	Forward and reverse engineering	TB:Ch-16
59	Activity Diagram: Modeling a work flow	TB:Ch-16
60	Modeling an operation	TB:Ch-16
61	Forward and reverse engineering	TB:Ch-16

Unit V: ARCHITECTURAL MODELING:

Component–Deployment–Component Diagrams and Deployment Diagrams.

UNIT V		
Lecture Hour	**Description**	**Reference with chapter**
62	Architectural modeling: Components, interfaces and realization	TB:Ch-25
63	Modeling executable and libraries	TB:Ch-25
64	Modeling tables, files and documents	TB:Ch-25
65	Modeling an API	TB:Ch-25
66	Modeling source code	TB:Ch-25
67	Mapping between logical and physical models	TB:Ch-25
68	Deployment: Nodes and connections	TB:Ch-25
69	Modeling processors, devices and distribution of components	TB:Ch-25
70	Component Diagram: Modeling source code and executable release	TB:Ch-25
71	Modeling physical database	TB:Ch-25
72	Modeling adaptable system	TB:Ch-25
73	Deployment Diagram: Modeling an embedded system	TB:Ch-25
74	Modeling client/server system	TB:Ch-25
75	Modeling a fully distributed system	TB:Ch-25

Semester	Course Code	Course Title	L	T	P	Total of LTP	C
VI	UCA15602	SOFTWARE ENGINEERING AND TESTING	4	1	0	5	4

UNIT – I - THE PRODUCT AND THE PROCESS (15 Hours)

The Evolving Role of Software– Software Characteristics– Software Applications– Software: A Crisis on the Horizon?- Software Myths- Software Engineering: A Layered Technology– The Software Process– Software Process Models– The Linear Sequential Model– The Prototyping Model- The RAD Model- Evolutionary Software Process Models- Component-Based Development.

UNIT – II - SYSTEM ENGINEERING AND ANALYSIS (15 Hours)

Computer-Based Systems– The System Engineering Hierarchy – Business Process Engineering: An Overview– Product Engineering: An Overview– Requirements Engineering– System Modeling– Requirement Analysis- Requirements Elicitation for Software- Software Prototyping- Specification- Specification Review.

UNIT – III - PRINCIPLES OF TESTING (15 Hours)

PRINCIPLES OF TESTING: Introduction - Phases of software – Quality assurance and Quality control - Testing verification and validation - TECHNIQUES: White box - static testing - structural testing - challenges in white box testing - Black box testing.

UNIT – IV - TYPES OF TESTING (15 Hours)

TYPES OF TESTING: Integration testing - Top-Down Integration – Bottom up integration-Bi-Directional Integration - System - Integration – SYSTEM ACCEPTANCE TESTING: Functional versus Non Functional Testing – Functional System Testing - Non Functional Testing Acceptance Testing.

UNIT – V - PERFORMANCE TESTING (15 Hours)

PERFORMANCE TESTING: Introduction - Factors of governing - performance testing-Methodology for performance testing - Tools for performance testing - Process for performance Testing – REGRESSION TESTING : Introduction - Types regression testing - Best practice in regression testing.

TEXT BOOKS :

1. Roger S. Pressman, (2001), “Software Engineering “, Fifth edition, McGraw-Hill Higher Education - A Division of The McGraw-Hill Companies.
2. Srinivasan Desikan and Gopalasamy Ramesh, "Software Testing for Principles and Practices", Person Education,.

REFERENCES :

1. William E. Perry (2006), "Effective Methods of Software Testing", 3rd Ed, Wily India.
2. Renu Rajani, Pradeep Oak (2007), "Software Testing", TMH.

LESSON PLAN

Subject Code : UCA15602

Subject Name : SOFTWARE ENGINEERING AND TESTING

UNIT – I - THE PRODUCT AND THE PROCESS (15 Hours)

The Evolving Role of Software– Software Characteristics– Software Applications– Software: A Crisis on the Horizon?- Software Myths- Software Engineering: A Layered Technology– The Software Process– Software Process Models– The Linear Sequential Model– The Prototyping Model- The RAD Model- Evolutionary Software Process Models- Component-Based Development.

UNIT - I		
Lecture Hour	**Description**	**Reference with Chapter**
1	The Evolving Role of Software	TB1, Ch1
2	Software Characteristics	TB1, Ch1
3	Software Applications and A Crisis	TB1, Ch1
4	Software Myths	TB1, Ch1
5	Software Engineering : Layered Technology	TB1, Ch2
6	Software Process	TB1, Ch2
7	Software Process	TB1, Ch2
8	Software Process Models : Linear Sequential Model	TB1, Ch2
9	Prototyping Model	TB1, Ch2
10	Rapid Application Development Model	TB1, Ch2
11	Evolutionary Software Process Models – Incremental Model	TB1, Ch2
12	Spiral Model	TB1, Ch2
13	WIN WIN Spiral Model	TB1, Ch2
14	Concurrent Development Model	TB1, Ch2
15	Component Based Development	TB1, Ch2

UNIT – II - SYSTEM ENGINEERING AND ANALYSIS (15 Hours)

Computer-Based Systems– The System Engineering Hierarchy – Business Process Engineering: An Overview– Product Engineering: An Overview– Requirements Engineering– System Modeling– Requirement Analysis- Requirements Elicitation for Software- Software Prototyping- Specification- Specification Review.

UNIT - II		
Lecture Hour	**Description**	**Reference with Chapter**
16	Computer-Based Systems	TB1, Ch 10
17	The System Engineering Hierarchy – System Modeling	TB1, Ch 10
18	System Simulation	TB1, Ch 10
19	Business Process Engineering: An Overview	TB1, Ch 10
20	Requirements Engineering	TB1, Ch 10
21	Requirements Elicitation	TB1, Ch 10
22	Requirements Analysis and Negotiation	TB1, Ch 10
23	Requirement Specification	TB1, Ch 10
24	Requirement Validation	TB1, Ch 10
25	Requirement Management	TB1, Ch 10
26	Software Prototyping	TB1, Ch 10
27	Selecting the prototyping approach	TB1, Ch 10
28	Prototyping Methods and tools	TB1, Ch 10
29	Specification Principles, Representation	TB1, Ch 10
30	Specification Review	TB1, Ch 10

UNIT – III - PRINCIPLES OF TESTING (15 Hours)

PRINCIPLES OF TESTING: Introduction - Phases of software – Quality assurance and Quality control - Testing verification and validation - TECHNIQUES: White box - static testing - structural testing - challenges in white box testing - Black box testing.

UNIT - III		
Lecture Hour	**Description**	**Reference with Chapter**
31	Principles of Testing	TB2, Ch 1
32	Principles of Testing	TB2, Ch 1
33	Phases of software	TB2, Ch 2
34	Phases of software	TB2, Ch 2
35	Quality assurance and Quality control	TB2, Ch 2
36	Testing verification and validation	TB2, Ch 2
37	White Box Testing	TB2, Ch 3
38	White Box Testing	TB2, Ch 3
39	Static Testing	TB2, Ch 3
40	Static Testing	TB2, Ch 3
41	Structural Testing	TB2, Ch 3
42	Structural Testing	TB2, Ch 3
43	Challenges in white box testing	TB2, Ch 3
44	Black box testing	TB2, Ch 4
45	Black box testing	TB2, Ch 4

UNIT – IV - TYPES OF TESTING (15 Hours)

TYPES OF TESTING: Integration testing - Top-Down Integration – Bottom up integration-Bi-Directional Integration - System - Integration – SYSTEM ACCEPTANCE TESTING: Functional versus Non Functional Testing – Functional System Testing - Non Functional Testing Acceptance Testing.

UNIT - IV		
Lecture Hour	**Description**	**Reference with Chapter**
46	Types of Testing – Integration Testing	TB2, Ch 5
47	Top- down Integration	TB2, Ch 5
48	Bottom up Integration	TB2, Ch 5
49	Bi-Directional Integration	TB2, Ch 5

50	System Integration	TB2, Ch 6
51	System Acceptance Testing	TB2, Ch 6
52	Functional Vs Non Functional Testing	TB2, Ch 6
53	Functional System Testing	TB2, Ch 6
54	Design and Architectural Verification, Business Vertical Testing	TB2, Ch 6
55	Deployment Testing and Beta Testing	TB2, Ch 6
56	Certification, Standards and Testing for Compliance	TB2, Ch 6
57	Non- Functional Testing, Scalability Testing	TB2, Ch 6
58	Reliability Testing, Stress Testing	TB2, Ch 6
59	Acceptance Testing, Acceptance Criteria	TB2, Ch 6
60	Selecting Test Cases and Executing Tests	TB2, Ch 6

UNIT – V - PERFORMANCE TESTING (15 Hours)

PERFORMANCE TESTING: Introduction - Factors of governing - performance testing- Methodology for performance testing - Tools for performance testing - Process for performance Testing – REGRESSION TESTING : Introduction - Types regression testing - Best practice in regression testing.

UNIT - V		
Lecture Hour	**Description**	**Reference with Chapter**
61	Performance Testing	TB2, Ch 7
62	Factors of Governing	TB2, Ch 7
63	Methodology for Performance Testing	TB2, Ch 7
64	Methodology for Performance Testing	TB2, Ch 7
65	Methodology for Performance Testing	TB2, Ch 7
66	Tools for Performance Testing	TB2, Ch 7
67	Process for Performance Testing	TB2, Ch 7
68	Challenges for Performance Testing	TB2, Ch 7
69	Regression Testing	TB2, Ch 8
70	Types of Regression Testing	TB2, Ch 8
71	Performing Initial Test, Understanding the Criteria	TB2, Ch 8

72	Classifying Test Cases, Methodology for Selecting Test Cases	TB2, Ch 8
73	Resetting the Test Cases, Concluding the Results of Regression Testing	TB2, Ch 8
74	Best Practices in Regression Testing	TB2, Ch 8
75	University Previous Question Papers Discussion	TB2, Ch 8

Subject code	Subject Name	L	T	P	Total of LTP	C
UCA15E04	**DATA MINING AND WAREHOUSING**	**4**	**0**	**0**	**4**	**4**

INSTRUCTIONAL OBJECTIVES:

At the end of this course the learner is expected:

1. To know the basic concepts of data mining

2. To classify & cluster the data

3. To use association rules on data.

4. To introduce the concept of data warehousing 5. To recover data in case of data loss.

UNIT I - DATA MINING (12 Hours)

Introduction- information and production factor- data mining Vs query tools – datamining and marketing -self learning computer system-computer learning-datalearning, data mining and data warehouse.

UNIT II - KNOWLEDGE DISCOVERY PROCESS (12 Hours)

Data selection- cleaning-enrichment-coding preliminary analysis of data set usingtraditional query tools-visualization techniques-OLAP tools-decision trees associationrules-Neural networks genetic algorithms-KDD(Knowledge discover in databases)environment.

UNIT III - DATA WAREHOUSE – ARCHITECTURE (12 Hours)

System process-process architecture, - design – database schema- partitioningstrategy-aggregations - data marting-meta data-system and data warehouse processmanagers.

UNIT IV - HARDWARE AND OPERATIONAL DESIGN (12 Hours)

Hardware and operational design of data warehouse - hardware arch-physical layoutsecurity-backup and receiver-service level agreement-operating the data warehouse.

UNIT V - PLANNING, TUNING AND TESTING (12 Hours)

Capacity planning- tuning the data warehouse- testing the data warehouses-datawarehouse features.

TEXT BOOKS

1. Pieter Adriaans, Dolf, Zantinge (1996), "Data mining", Addison Wesley"(Unit I &II)

2. Sam Anahory, Dennis Murray "Data Warehousing in real world" (1997), AddisonWesley.(Unit III, IV & V)

REFERENCES

1. Mark Hall, Ian Witten and Eibe Frank (2011),"Data Mining: Practical MachineLearning Tools and Techniques", Third edition, Morgan Kaufmann Publisher.

2. PaulrajPonniah (2012), "Data Warehousing: Fundamentals for IT Professionals",Second Edition, Wiley India Pvt Ltd.

LESSON PLAN

Subject Name : DATA MINING AND WAREHOUSING

Subject Code : UCA15E04

UNIT I - DATA MINING (12 Hours)

Introduction- information and production factor- data mining Vs query tools – data mining and marketing -self learning computer system-computer learning-data learning, data mining and data warehouse.

UNIT I		
Lecture Hours	**Description**	**Reference with chapter**
1	Introduction	TB1,CH-1
2	Information and production factor	TB1, CH-1
3	Data mining Vs query tools	TB1, CH-1
4	Data mining and Marketing	TB1, CH-1
5	Self learning computer system	TB1, CH-2
6	Computer learning	TB1, CH-2
7	Data learning	TB1, CH-2
8	Data mining and Data warehouse.	TB1, CH-3
9	Decision support system	TB1, CH-3
10	Integrating with data mining	TB1, CH-3
11	Client/server and data warehouse	TB1, CH-3
12	Multi processing machine, cost justification	TB1, CH-3

UNIT II - KNOWLEDGE DISCOVERY PROCESS (12 Hours)

Data selection- cleaning-enrichment-coding preliminary analysis of data set using traditional query tools-visualization techniques-OLAP tools-decision trees association rules-Neural networks genetic algorithms-KDD(Knowledge discover in databases)environment.

UNIT II		
Lecture Hours	**Description**	**Reference with chapter**
13	Knowledge discovery process, Data selection-cleaning-enrichment	TB1,CH-4
14	Coding, data mining, reporting	TB1,CH-4
15	Preliminary analysis of data set using traditional query tools	TB1,CH-4
16	Visualization techniques-OLAP tools	TB1,CH-4
17	Decision trees	TB1,CH-4
18	Association rules	TB1,CH-4
19	Neural networks	TB1,CH-4
20	genetic algorithms	TB1,CH-4
21	KDD environment, Different forms of knowledge	TB1, CH-5
22	Data selection, cleaning, enrichment	TB1, CH-5
23	Coding ,data mining, reporting	TB1, CH-5
24	KD environment, Ten golden rules	TB1, CH-5

UNIT III - DATA WAREHOUSE – ARCHITECTURE (12 Hours)

System process-process architecture, - design – database schema- partitioning strategy-aggregations - data marting-meta data-system and data warehouse process managers.

UNIT III

Lecture Hours	Description	Reference with chapter
25	Data warehouse architecture- System process- process flow with in data ware house	TB2, CH-3
26	Extract an load process, clean an transform, backup an archive process, query management process	TB2, CH-3
27	Process architecture- load manager, Warehouse manager, query manager	TB2, CH-4
28	Detailed information, summary information	TB2, CH-4
29	Design – database schema , starflake schema, identifying facts, designing fact tables	TB2, CH-5
30	Designing dimension tables, designing star flake schema, query redirection, multidimensional schema	TB2, CH-5
31	Partitioning strategy	TB2, CH-6
32	Aggregations	TB2, CH-7
33	Data Marting	TB2, CH-8
34	Meta data	TB2, CH-9
35	System and data warehouse process managers- System managers, data warehouse process manager	TB2, CH-10
36	Load manager, warehouse manager, query manager	TB2, CH-10

UNIT IV - HARDWARE AND OPERATIONAL DESIGN (12 Hours)

Hardware and operational design of data warehouse - hardware architecture -physical layout security-backup and receiver-service level agreement-operating the data warehouse.

UNIT IV		
Lecture Hours	**Description**	**Reference with chapter**
37	Hardware and operational design of data warehouse - Hardware architecture-process, server hardware.	TB2, CH-11
38	Network hardware, client hardware	TB2, CH-11
39	physical layout – parallel technology, disk technology	TB2, CH-12
40	Database layout, file systems	TB2, CH-12

41	security- requirements	TB2, CH-13
42	Performance impact of security, security impact of design	TB2, CH-13
43	backup and receiver-definition , hardware, software	TB2, CH-14
44	Backup strategies, testing the strategies, disaster recovery	TB2, CH-14
45	service level agreement- types of system, data warehouse is operational system or not	TB2, CH-15
46	Defining the SLA	TB2, CH-15
47	operating the data warehouse- day to day operation of the data warehouse	TB2, CH-16
48	Overnight processing	TB2, CH-16

UNIT V - PLANNING, TUNING AND TESTING (12 Hours)

Capacity planning- tuning the data warehouse- testing the data warehouses-data warehouse features

UNIT V		
Lecture Hours	**Description**	**Reference with chapter**
49	Capacity planning-estimating the load-initial configuration, CPU bandwidth,	TB2, CH-17
50	How much memory-how much disk	TB2, CH-17
51	Database and non data base sizing	TB2, CH-17
52	Tuning the data warehouse – assessing performance	TB2, CH-18
53	Tuning the data load	TB2, CH-18
54	Tuning queries	TB2, CH-18
55	Testing the data warehouses-developing the test plan	TB2, CH-19
56	Testing backup recovery and operational environment	TB2, CH-19
57	Testing the data base	TB2, CH-19
58	Testing the applications	TB2, CH-19
59	Logistics of the test	TB2, CH-19

60	Data warehouse features	TB2, CH-20

Semester	Course Code	Course Title	L	T	P	Total Of LTP	C
V	UCA15E09	INFORMATION SECURITY	4	0	0	4	4

UNIT I - INTRODUCTION (12 Hours)

Meaning, importance, basics - changing nature and global information systems. Threats: New Technologies Open Door Threats - information Level Threats Vs Network Level-Threats - Information system security - Computer Viruses - Classifications of Threats and assessing damages and protecting information system security.

UNIT II - INFORMATION SECURITY POLICY (12 Hours)

Security policy, standards, guidelines, Information security management system, Basic Principles, Security related Terms, Three Pillars of Information Security. Information Classification, criteria for information and classification.

UNIT III - PHYSICAL SECURITY (12 Hours)

Need, Meaning, Natural Disasters and control, basic tenets of physical security of information systems resources, physical entry controls. Biometrics Controls for Security: Introduction, Access Control, User Identification & Authentication. Meaning, Nature of Biometric identification/Authentication techniques, Biometric techniques. Key Success factors and benefits.

UNIT IV - NETWORK SECURITY, CRYPTOGRAPHY (12 Hours)

Need, Basic concepts, network security dimensions, establishing security perimeter for network protection, Network types, Firewall: Introduction, need, topologies for different type of firewalls. Cryptography: basic elements of cryptography, Digital Signature, Cryptography algorithms – DES, AES and public key cryptography (RSA)

UNIT V - DATABASE SECURITY (12 Hours)

Introduction, Need, federated databases, securing the contents of mobile databases, data integrity as a parameter for database security, database security policy. Security Models & Frameworks: Intro, Terminology. Methodologies for Information System Security

TEXT BOOKS

1. Nina Godbole (2009), "*Information Systems Security*", Wiley Publications. (Unit I , II , III & V)
2. Atul Kahate (2003), "*Cryptography & Network Security*", TataMcgraw Hill. (Unit IV)

REFERENCES

1. Mark Merkow (2006),"*Information Security, 1/e: Principles and Practices*" Pearson Education.
2. Bragg, Roberta (2004), "*Network Security: The Complete Reference*",

LESSON PLAN

Subject Title: INFORMATION SECURITY

Subject Code: UCA15E09

UNIT I - INTRODUCTION (12 Hours)

Meaning, importance, basics - changing nature and global information systems. Threats: New Technologies Open Door Threats - information Level Threats Vs Network Level-Threats - Information system security - Computer Viruses - Classifications of Threats and assessing damages and protecting information system security.

Lecture Hour	Description	Reference with chapter
1	Introduction To Information Systems	TB:I Chapter 1.1
2	Meaning and Importance of Information System	TB:I Chapter 1.2
3	Basics of Information System	TB:I Chapter 1.3
4	Changing Nature of Information System	TB:I Chapter 1.4
5	Global Information Systems	TB:I Chapter 1.6
6	Threats – General Concepts	TB:I Chapter 2.1
7	New Technologies Open Door Threats	TB:I Chapter 2.2
8	Information Level Threats Vs Network Level Threats	TB:I Chapter 2.3
9	Information System Security: Threats and Attacks	TB:I Chapter 2.4
10	Computer Viruses	TB:I Chapter 2.5
11	Classifications Of Threats and Assessing Damages	TB:I Chapter 2.6
12	Protecting Information System Security	TB:I Chapter 2.7

UNIT II - INFORMATION SECURITY POLICY (12 Hours)

Security policy, standards, guidelines, Information security management system, Basic Principles, Security related Terms, Three Pillars of Information Security. Information Classification, criteria for information and classification.

Lecture Hour	Description	Reference with chapter
13	Security Policy	TB:I Chapter 4.1
14	Standards	TB:I Chapter 4.2
15	Guidelines	TB:I Chapter 4.2

16	Information Security Management System	TB:I Chapter 4.4
17	Basic Principles of Information System Security	TB:I Chapter 5.2
18	Security Related Terms and Definitions	TB:I Chapter 5.3
19	Three Pillars Of Information Security	TB:I Chapter 5.4
20	Information Classification	TB:I Chapter 5.6
21	Terms for Information Classification	TB:I Chapter 5.7
22	Criteria For Classification of Data and Information	TB:I Chapter 5.8
23	Information Classification : Various Roles	TB:I Chapter 5.9

UNIT III - PHYSICAL SECURITY (12 Hours)

Need, Meaning, Natural Disasters and control, basic tenets of physical security of information systems resources, physical entry controls. Biometrics Controls for Security: Introduction, Access Control, User Identification & Authentication. Meaning, Nature of Biometric identification/Authentication techniques, Biometric techniques. Key Success factors and benefits.

Lecture Hour	Description	Reference with chapter
24	Need for Physical Security	TB:I Chapter 7.2
25	Meaning for Physical Security	TB:I Chapter 7.2
26	Natural Disasters And Controls	TB:I Chapter 7.1
27	Basic Tenets Of Physical Security Of Information Systems Resources	TB:I Chapter 7.5
28	Physical Entry Controls	TB:I Chapter 7.6
29	Biometrics Controls For Security- Introducion	TB:I Chapter 9.1
30	Access Controls, User Identification and User Authentication	TB:I Chapter 9.2
31	Nature Of Biometric Identification/Authentication Techniques	TB:I Chapter 9.4
32	Biometric Techniques	TB:I Chapter 9.5
33	Key Success Factors for Biometric System	TB:I Chapter 9.7
34	Benefits of Biometric	TB:I Chapter 9.8

UNIT IV - NETWORK SECURITY, CRYPTOGRAPHY (12 Hours)

Need, Basic concepts, network security dimensions, establishing security perimeter for network protection, Network types, Firewall: Introduction, need, topologies for different type of firewalls. Cryptography: basic elements of cryptography, Digital Signature, Cryptography algorithms – DES, AES and public key cryptography (RSA)

Lecture Hour	Description	Reference with chapter
35	Introduction To Network Security, Need	TB:I Chapter 11.1
36	Basics Concepts	TB:I Chapter 11.3
37	Network Security Dimensions	TB:I Chapter 11.4
38	Establishing Security Perimeter For Network Protection	TB:I Chapter 11.5
39	Network Types	TB:I Chapter 12.2
40	Firewall – Introduction	TB:I Chapter 15.1
41	Need for Firewall	TB:I Chapter 15.4
42	Topologies For Different Type Of Firewalls	TB:I Chapter 15.6
43	Cryptography :Introduction, Basic elements of cryptography	TB:II Chapter 2
44	Digital Signature	TB:I Chapter 13.5
45	Cryptography Algorithms	TB:I Chapter 13.6
46	DES Algorithm	TB:II Chapter 3.4
47	AES Algorithm	TB:II Chapter 3.8
48	Public Key Cryptography (RSA)	TB:II Chapter 4.4

UNIT V - DATABASE SECURITY (12 Hours)

Introduction, Need, federated databases, securing the contents of mobile databases, data integrity as a parameter for database security, database security policy. Security Models & Frameworks: Intro, Terminology. Methodologies for Information System Security

Lecture Hour	Description	Reference with chapter
49	Database Security – Introduction	TB:I Chapter 20.1
50	Database Security challenge in modern world	TB:I Chapter 20.2
51	Need	TB:I Chapter 20.4
52	Federated Databases	TB:I Chapter 20.5
53	Securing The Contents Of Mobile Databases	TB:I Chapter 20.6
54	Data Integrity As A Parameter For Database Security	TB:I Chapter 20.8
55	Database Security Policy	TB:I Chapter 20.9
56	Security Models & Framework – Introduction	TB:I Chapter 22.1

57	Terminology	TB:I Chapter 22.2
58	Methodologies For Information System Security – IAM	TB:I Chapter 22.3
59	IEM, OCTAVE	TB:I Chapter 22.3
60	OSSTMM , SIPES	TB:I Chapter 22.3