



DEPARTMENT OF COMPUTER APPLICATIONS

**B.C.A. - SECOND YEAR
(2015-2016 REGULATION)**

THIRD SEMESTER

LESSON PLAN

SRM UNIVERSITY

FACULTY OF SCIENCE AND HUMANITIES

SRM NAGAR, KATTANKULATHUR – 603 203

Semester	Course Code	Course Title	L	P	C
III	UCA15301	PROGRAMMING IN JAVA	5	0	5

UNIT I - INTRODUCTION TO JAVA

The Genesis of Java- Buzzwords- Object oriented Concepts- Lexical Issues- Data types and variables- Arrays- Operators - Control Statements: Selection- Iteration and jump Statement.

UNIT II - CLASSES AND METHODS

Introducing classes - Class fundamentals - Declaring Objects - Assigning object reference variables. Introducing method – Constructors- The this Keyword- Garbage Collection- Finalize() method- Overloading methods- Using objects as parameters- Argument Passing - Returning Objects- Recursion – static and final keyword - Nested and Inner Classes - String Class - Command Line arguments.

UNIT III - INHERITANCE, PACKAGES, INTERFACES

Inheritance Basics - using Super- method Overriding – Dynamic method dispatch - abstract classes- Using final with Inheritance – Packages – Access Protection – Importing packages –Interfaces.

UNIT IV - EXCEPTION HANDLING, MULTITHREADING, APPLET

Exception handling fundamentals- Types- Using try, catch, throw, throws and finally - Java thread model – Creating a Thread – Creating multiple threads - Thread priorities – synchronization - Inter-thread communication - Applet Basics – Applet Skeleton – HTML applet tag – Passing parameters to applet

UNIT V - I/O STREAMS, UTILITY CLASSES, EVENT HANDLING

I/O Streams: Byte Streams – Character Streams – Reading and Writing Files — Legacy Classes and Interface: Vector, Stack, The Enumeration Interface - Utility classes: String Tokenizer, Date, Calendar, Gregorian Calendar, Random, Scanner – Introduction to Event Handling: Event Classes – Event Listener Interfaces.

TEXT BOOK

1. Herbert Schildt, (2007),”Java: The Complete Reference”, Seventh Edition, McGraw Hill.

REFERENCES

1. Arnold and J.Gosling,(2000), ”The Java Programming Language”, Second edition, Addison Wesley.
2. Art Gittleman, (2002), “Ultimate Java Programming”, Wiley Publications.

LESSON PLAN

Subject Name: PROGRAMMING IN JAVA
Subject Code: UCA15301

UNIT I		
Lecture Hour	Description	Reference with chapter
1	The Genesis of Java	TB1, Ch-1
2	Buzzwords	TB1, Ch-1
3	Object Oriented Concepts	TB1, Ch-2
4	Lexical Issues	TB1, Ch-2
5	Data Types	TB1, Ch-3
6	Variables	TB1, Ch-3
7	Arrays	TB1, Ch-3
8	(Contd.) Arrays	TB1, Ch-3
9	Operators	TB1, Ch-4
10	(Contd.) Operators	TB1, Ch-4
11	Control Statements: Selection	TB1, Ch-5
12	Iteration	TB1, Ch-5
13	Jump Statement	TB1, Ch-5

UNIT II		
Lecture Hour	Description	Reference with chapter
14	Introducing Classes	TB1, Ch-6
15	Class Fundamentals	TB1, Ch-6
16	Declaring Objects	TB1, Ch-6
17	Assigning Object Reference Variables	TB1, Ch-6
18	Introducing Method	TB1 - Ch-6
19	Constructors	TB1, Ch-6
20	The this keyword	TB1, Ch-6
21	Garbage Collection	TB1, Ch-6

22	Finalize() method	TB1, Ch-6
23	Overloading Methods	TB1, Ch-7
24	Using objects as parameters	TB1, Ch-7
25	Argument Passing	TB1, Ch-7
26	Returning Objects	TB1, Ch-7
27	Recursion	TB1, Ch-7
28	Static and final keyword	TB1, Ch-7
29	Nested and Inner Classes	TB1, Ch-7
30	String Class	TB1, Ch-7
31	(Contd.) String Class	TB1, Ch-7
32	Command Line Arguments	TB1, Ch-7

UNIT III		
Lecture Hour	Description	Reference with chapter
33	Inheritance Basics	TB1, Ch-8
34	(Contd.) Inheritance Basics	TB1, Ch-8
35	Using Super	TB1, Ch-8
36	Method Overriding	TB1, Ch-8
37	Dynamic Method Dispatch	TB1, Ch-8
38	Abstract Classes	TB1, Ch-8
39	Using final with Inheritance	TB1, Ch-8
40	Packages	TB1, Ch-9
41	Access Protection	TB1, Ch-9
42	Importing Packages	TB1, Ch-9
43	Interfaces	TB1, Ch-9
44	(Contd.) Interfaces	TB1, Ch-9

UNIT IV		
Lecture Hour	Description	Reference with chapter
45	Exception Handling Fundamentals	TB1, Ch-10
46	Types	TB1, Ch-10
47	Using try, catch,	TB1, Ch-10
48	Throw, throws	TB1, Ch-10
49	finally	TB1, Ch-10
50	Java thread Model	TB1, Ch-11
51	Creating a thread	TB1, Ch-11
52	Creating Multiple Threads	TB1, Ch-11
53	Thread Priorities	TB1, Ch-11
54	Synchronization	TB1, Ch-11
55	Inter-thread Communication	TB1, Ch-11
56	Applet Basics	TB1, Ch-12
57	Applet Skeleton	TB1, Ch-12
58	HTML Applet Tag	TB1, Ch-12
59	Passing Parameters to Applet	TB1, Ch-12

UNIT V		
Lecture Hour	Description	Reference with chapter
60	I/O Streams: Byte Streams	TB1, Ch-13
61	Character Streams	TB1, Ch-13
62	Reading Files	TB1, Ch-13
63	Writing Files	TB1, Ch-13
64	Legacy Classes and Interface: Vector	TB1, Ch-17
65	Stack	TB1, Ch-17
66	The Enumeration Interface	TB1, Ch-17
67	Utility Classes: String Tokenizer	TB1, Ch-18
68	Date	TB1, Ch-18
69	Calendar	TB1, Ch-18
70	Gregorian Calendar	TB1, Ch-18
71	Random	TB1, Ch-18
72	Scanner	TB1, Ch-18
73	Introduction to Event Handling: Event Classes	TB1, Ch-22
74	(Contd.) Event Classes	TB1, Ch-22
75	Event Listener Interfaces	TB1, Ch-22

Semester	Course Code	Course Title	L	P	C
III	UCA15302	RDBMS	5	0	5

Unit I: INTRODUCTION

Data-Database-DBMS-File Processing system vs. DBMS-Data Independence-Data catalog-Three schema architecture of a database-Functional components of DB- ER Model: Entity-Attributes and its type – Entity and Relationship-Design issues of ER Model-Constraints.

Unit II: STRUCTURED QUERY LANGUAGE(SQL)

Overviews of SQL- Data Definition commands, set operations, aggregate function, null values, Data Manipulation commands, Data control commands, Views in SQL, Nested complex queries.

Unit III: RELATIONAL – DATABASE DESIGN.

Relational- Database Design: Design guidelines for relational schema, Functional Dependencies – Normal Forms – 1NF – 2NF-3NF- BCNF – 4NF-.Integrity and security in database: Domain constraints, Referential integrity.

Unit IV: TRANSACTION MANAGEMENT

Transaction MANAGEMENT: Transaction concept, Transaction state, ACID Properties, Implementation of Atomicity and Durability, concurrent executions, Serializability, Recoverability, Implementation of isolation.

Unit V : CONCURRENCY CONTROL AND PHYSICAL STORAGE MEDIA

Concurrency control: lock-based, Time stamp-based, validation-based protocols, Deadlock handling, Recovery system, Failure classification, storage structure, Overview of physical storage Media: Magnetic Disks- RAID- Tertiary storage_ File Organization- Organization of Records in Files- Indexing and Hashing- Ordered indices- Static Hashing- Dynamic Hashing.

BOOK FOR STUDY:

1. Abraham Silberschatz, Henry F. Korth and S. Sudarshan- “Database System Concepts”, Fourth Edition, McGraw-Hill, 2002.(Unit I,IV and V)
2. Date C.J.,Kannan A.,Swamynathan S.,(2006),” An Introduction to Database Systems”, Eighth Edition, Pearson Education.(Unit II and III)

REFERENCES:

1. Ramez Elmasri and Shamkant B. Navathe, “Fundamental Database Systems”, Third Edition, Pearson Education, 2003.

LESSON PLAN

Subject Name: RDBMS
Subject Code: UCA15302

UNIT I		
Lecture Hour	Description	Reference with chapter
1	Data-Database-DBMS	TB1,ch-1.1
2	File Systems versus Database systems	TB1, Ch-1.2
3	Data Independence : Logical and Physical	TB2, Ch-2.2.2
4	Data catalog	TB2,Ch -3.3
5	Data Models : Entity Relationship model	TB1, Ch-1.3.3
6	Relational Model, Hierarchical and Network Model	TB1, Ch-1.3.3
7	DBMS Architecture : The three schema architecture	TB2, Ch-2.2
8	Data Modeling using Entity Relationship model	TB2, Ch-3
9	Entity types, Entity Sets, Attributes, and Keys	TB2, Ch-3.3
10	Relationships, Relationship types and constraints	TB2, Ch-3.4
11	Weak Entity types, Refining the ER Design for the company database	TB2, Ch-3.5 TB2, Ch-3.6
12	ER Diagrams, Naming Conventions	TB2, Ch-3.7
13	Design Issues of ER Model	TB2, Ch-3.7
14	Constraints	TB2, Ch-4.3

UNIT II		
Lecture Hour	Description	Reference with chapter
15	Overview of SQL	TB1, Ch – 3.1
16	Data Definition Commands- Create, Alter	TB1, Ch-3.2
17	Data Definition Commands- Drop, Desc	TB1, Ch-3.2
18	Set Operations- Union , Union all, Intersect, Minus	TB1, Ch-3.4
19	Set Operations- Cartesian product, division	TB1,Ch-3.4
20	Aggregate Functions- maxi, min, sum, avg	TB1, Ch-3.5
21	Aggregate Functions- count and null values	TB1, Ch-3.5,3.6
22	Data Manipulation Commands- insert, delete	TB1, Ch-3.10
23	Data Manipulation Commands- update and select	TB1, Ch-3.10
24	Views in SQL	TB1 - Ch-3.9
25	Nested queries	TB1, Ch-3.7
26	Complex queries	TB1, Ch-3.8
27	Data control commands	TB1, Ch-3.10.5

UNIT III		
Lecture Hour	Description	Reference with chapter
28	Database Design- Introduction	TB2, Ch-11.1
29	Relational Model Concepts: Domains, Attributes, and Relations	TB2, Ch-7.1, 7.1.1
30	Characteristics of Relations, Relational Model Notation	TB2, Ch-7.1.2, 7.1.3
31	Relational Algebra: Select, Project, Rename Operation	TB2, Ch-7.4
32	Functional Dependencies	TB2, Ch-12.2
33	Non-loss Decomposition	TB2, Ch-12.2
34	Normal Forms: 1NF, 2NF, 3NF	TB2, Ch-12.3
35	Boyce/Codd Normal Form	TB2, Ch-12.5
36	Multi-valued dependencies and 4NF	TB2, Ch-13.2
37	Join Dependencies and 5NF	TB2, Ch-13.3
38	Integrity and security in database- Domain constraint	TB2, Ch-9.5
39	Integrity and security in database-Referential integrity	TB2, Ch-9.4

UNIT IV		
Lecture Hour	Description	Reference with chapter
40	Transaction Management- Transaction concept	TB1, Ch-15.1
41	Properties of Transactions- ACID	TB1, Ch-15.1
42	Transaction States	TB1, Ch-15.2
43	Implementation of Atomicity and Durability	TB1, Ch-15.3
44	Concurrent Executions	TB1, Ch-15.4
45	Serializability-Introduction	TB1, Ch-15.5
46	Conflict Serializability	TB1, Ch-15.5.1
47	Non-Conflict Serializability	TB1, Ch-15.5.1
48	View Serializability	TB1, Ch-15.5.2
49	Recoverability- Recoverable Schedule	TB1, Ch-15.6.1
50	Recoverability- Cascadeless Schedule	TB1, Ch-15.6.2
51	Implementation of isolation	TB1, Ch-14.7

UNIT V		
Lecture Hour	Description	Reference with chapter
52	Concurrency control	TB1, Ch-16
53	Locking Techniques: Types of Locks	TB1., Ch-16.1
54	Dealing with Deadlock and Starvation	TB1, Ch-16.6
55	Time Stamp Ordering	TB1, Ch-16.2

56	Validation Techniques	TB1, Ch-16.3
57	Granularity of Data Items	TB1, Ch-16.4
58	Recovery Concepts	TB1, Ch-17
59	Shadow Paging	TB1, Ch-11.3.1
60	Log Based Recovery	TB1, Ch-17.4
61	Secondary storage Devices: Hardware Description of Disk Devices	TB1, Ch - 11
62	Magnetic Tape Storage Devices	TB1, Ch - 11.1,11.2
63	RAID Technology	TB1, Ch-11.3
64	RAID Organizations and Levels	TB1, Ch-11.3.3
65	File Operations	TB1, Ch-11.6
66	Hashing Techniques	TB1 - Ch-12
67	External Hashing for Disk Files	TB1, Ch-12.6
68	Hashing Techniques that allow Dynamic File Expansion	TB1, Ch-12.7
69	Indexing: Types of Single level Ordered Indexes	TB1, Ch-12
70	Multilevel Indexes	TB1, Ch-12.2.2

Subject Code	Subject Title	L	T	P	Total of LTP	C
UCA15E51	DIGITAL LOGIC FUNDAMENTALS	3	0	0	3	3

UNIT I - NUMBER SYSTEMS

(9 Hours)

Introduction- Conversion from one base to another-Complements- Boolean algebra & properties of Boolean algebra- Logic Gates.

UNIT II – BOOLEAN FUNCTIONS

(9 Hours)

Boolean functions, Karnaugh map(upto 5 Variables) - SOP-POS- Mc-Clausky Tabulation methods.

UNIT III – FLIP-FLOPS

(9 Hours)

Sequential logic circuits - RS & JK Flip-Flops – D&T Flip-Flops-Trigging of flips.

UNIT IV – REGISTERS AND COUNTERS

(9 Hours)

Registers – Shift Registers- Counters & Ripple Counters - Synchronous Counters- Design of Counters

UNIT V – ADDERS & SUBTRACTORS

(9 Hours)

Adders& Subtractors- Encoders-Decoders-Multiplexer – Demultiplexer

TEXT BOOK

1. Mano M.M. (1994), “Digital Logic and Computer Design”, Prentice Hall of India,.

REFERENCE

1. Bartee T.C. (1991), ‘Computer Architecture and logical Design’, McGraw Hill,

LESSON PLAN

Subject Name: DIGITAL LOGIC FUNDAMENTALS
Subject Code: UCA15E51

UNIT I		
Lecture Hour	Description	Reference with chapter
1	Decimal Number System	TB1, CH1
2	Conversion from Decimal to Other Base	TB1, CH1
3	Conversion from Other base to Decimal	TB1, CH1
4	Binary, Octal and Hexa decimal system	TB1, CH1
5	9's and 10's Complements	TB1, CH1
6	2's and 1's Complements	TB1, CH1
7	Boolean Algebra	TB1, CH2
8	Basic Theorems and Properties of Boolean Algebra	TB1, CH2
9	Logic Gates	TB1, CH2

UNIT II		
Lecture Hour	Description	Reference with chapter
10	Boolean Functions, Representation using truth table, Implementation using logic gates	TB1, CH2
11	Sum of Product	TB1, CH2
12	Product of Sum	TB1, CH2
13	Simplification of Boolean function – Introduction	TB1, CH3
14	2 and 3 variable K Map	TB1, CH3
15	4 and 5 variable K Map	TB1, CH3
16	Don't - Care Conditions	TB1, CH3
17	Mc-Clausky Tabulation method –Determination of Prime Implicants	TB1, CH3
18	Selection of Prime Implicants	TB1, CH3

UNIT III		
Lecture Hour	Description	Reference with chapter
19	Sequential Logic – Introduction	TB1,CH6
20	Flip Flops - Introduction	TB1,CH6
21	RS Flip Flop	TB1,CH6

22	JK Flip Flop	TB1,CH6
23	D Flip Flop	TB1,CH6
24	T Flip Flop	TB1,CH6
25	Triggering of Flip flops	TB1,CH6
26	Master – Slave Flip Flop	TB1,CH6
27	Edge – Triggered Flip Flop	TB1,CH6

UNIT IV		
Lecture Hour	Description	Reference with chapter
28	Registers	TB1,CH7
29	Shift Registers – Serial Transfer	TB1,CH7
30	Bidirectional Shift Register with parallel load	TB1,CH7
31	Ripple Counters – Binary Ripple counters	TB1,CH7
32	BCD Ripple Counters	TB1,CH7
33	Synchronous Counters	TB1,CH7
34	Binary Counter	TB1,CH7
35	Binary Up-Down Counter	TB1,CH7
36	Design of Counters	TB1,CH7

UNIT V		
Lecture Hour	Description	Reference with chapter
37	Combinational Logic – Introduction	TB1, CH4
38	Half Adder	TB1, CH4
39	Full Adder	TB1, CH4
40	Half Subtractor	TB1, CH4
41	Full Subtractor	TB1, CH4
42	Decoder	TB1, CH5
43	Encoder	TB1, CH5
44	Multiplexer	TB1, CH5
45	Demultiplexer	TB1, CH5