

Name of faculty: Gaurav Gambhir

Discipline: Computer Science

Semester: 6<sup>th</sup>

Subject: CSE 304 N - Essentials of Information Technology

Lesson Plan Duration: 15 Weeks (from January, 2018 to April, 2018)

\*\* Work Load (Lecture / Practical) per week (in hours): Lectures -03 , Practical -03

Week	Theory		Practical	
	Lecture day	Topic (including assignment/test)	Practical Day	Topic
1 <sup>st</sup>	1 <sup>st</sup>	Introduction to Module	1 <sup>st</sup>	Design the solution using pseudo code and flowcharts for practical problems
	2 <sup>nd</sup>	Introduction to problem solving, Computational problem and its classification - Logic and its types,		
	3 <sup>rd</sup>	Introduction to algorithms and flowchart, Introduction to Algorithm Tools, Steps to Developing a Program, Pseudo code, Flowchart elements		
2 <sup>nd</sup>	4 <sup>th</sup>	Searching algorithms: linear search, binary search	2 <sup>nd</sup>	Implement design solution of wk 1 problems using RAPTOR tool,
	5 <sup>th</sup>	Sorting algorithms: insertion sort, quick sort,		
	6 <sup>th</sup>	Sorting algorithms: merge and selection sort		
3 <sup>rd</sup>	7 <sup>th</sup>	Introduction and classification to Data Structures, Basic Data Structures: array, stack, and queue.	3 <sup>rd</sup>	Flowchart implementation of Sorting algorithms using RAPTOR tool, Understanding basic programming constructs using Scratch Tool, Eclipse IDE basics
	8 <sup>th</sup>	Revision of Unit 1		
	9 <sup>th</sup>	Programming Basics, Application vs. Applet , Terminologies Platform, Java Platform, Java API, Language features, Why Java platform independent, JDK		
4 <sup>th</sup>	10 <sup>th</sup>	A simple Java application, How application is executed by computer , types of comments, Identifiers	4 <sup>th</sup>	Write simple Java applications to Understand basic Programming Language

	11 <sup>th</sup>	Java Keywords, Data types, Primitive and Reference data types.		Constructs,  Write simple Java applications to Understand use of operators
	12 <sup>th</sup>	Operators - Arithmetic, Assignment, Bitwise, Relational, Logical operators, Ternary operator.		
5 <sup>th</sup>	13 <sup>th</sup>	Conditional Constructs – if (null else), if ... else, nested if, compound if, switch, Iteration control : Counter-controlled	5 <sup>th</sup>	Write simple Java applications to Understand Conditional Constructs & Iteration control,  Write simple Java applications to demonstrate use of one dimensional and multi dimensional arrays & Use of String class & its methods
	14 <sup>th</sup>	Iteration control : Sentinel-controlled, Iteration control : Flag-controlled, break, Type Conversion and Casting		
	15 <sup>th</sup>	Arrays, One-Dimensional Arrays, ways of declaring arrays, Multidimensional Arrays, Strings, Object Oriented Concepts fundamentals		
6 <sup>th</sup>	16 <sup>th</sup>	Introduction to classes & Objects , instance and reference variables, Pass by value Pass by reference	6 <sup>th</sup>	Write Java applications to Understand Object Oriented Concepts,  Write Java programs to understand constructors, overloading and use of this operator
	17 <sup>th</sup>	Object Oriented Principles, Creation of Objects, The Heap and Garbage Collection		
	18 <sup>th</sup>	Constructors, Constructors vs. Methods, Overloading Constructors, Using this with variable, methods and constructors,		
7 <sup>th</sup>	19 <sup>th</sup>	Introduction to packages, Access specifiers with examples, static modifiers and command line arguments.	7 <sup>th</sup>	Use of public, private, protected and default access specifiers using Java programs,  Writing Java code to understand Static and
	20 <sup>th</sup>	Essential Elements of a UML Class Diagram, Relationships in Class Diagram, association, multiplicity, aggregation, Generalization, Composition		

	21 <sup>st</sup>	Use Case Diagrams , Components of Use case diagrams, Relationships in UCD, Guidelines to draw Use case diagram.		dynamic polymorphism
8 <sup>th</sup>	22 <sup>nd</sup>	Revision of Unit 2	8 <sup>th</sup>	Understanding Java API and generating Java doc,  How to design Class diagram and Use case diagram to MS Visio
	23 <sup>rd</sup>	Sessional Test 1		
	24 <sup>th</sup>	Association, Aggregation, Composition overview, Inheritance, use of extends , types of inheritance,		
9 <sup>th</sup>	25 <sup>th</sup>	Single Inheritance Multiple Inheritance (Through Interface) Multilevel Inheritance Hierarchical Inheritance Hybrid Inheritance (Through Interface) With examples	9 <sup>th</sup>	How to write code as per Industry Coding Standards  Optimization & Refactoring of code  JDBC Concepts and Writing Java application connecting to MySQL
	26 <sup>th</sup>	Use of Super, Overriding Base Class Methods		
	27 <sup>th</sup>	Polymorphism: method overloading, constructor overloading, with examples		
10 <sup>th</sup>	28 <sup>th</sup>	Dynamic polymorphism: method overriding with examples,	10 <sup>th</sup>	Writing first real world related problem focusing on both Java Language & MySQL  Doubt sessions related to writing first real world
	29 <sup>th</sup>	Abstract classes, Interface, Abstract class vs. Interface, How Interface similar to class, How Interface different from class		
	30 <sup>th</sup>	Industry Coding Standards and Best Practices,		
11 <sup>th</sup>	31 <sup>st</sup>	Code tuning & Optimization	11 <sup>th</sup>	Writing Second real world related problem focusing on both Java
	32 <sup>nd</sup>	Clean code & Refactoring		

	33 <sup>rd</sup>	Revision of Unit 3		Language & MySQL  Doubt sessions related to writing second real world
12 <sup>th</sup>	34 <sup>th</sup>	Data Processing, Data Processing Cycle, the database technology, data models, High Level or Conceptual data models Representational or implementation data models Low level or Physical data models.	12 <sup>th</sup>	Writing third real world related problem focusing on both Java Language & MySQL  Doubt sessions related to writing third real world
	35 <sup>th</sup>	ER modeling concepts, notations, Entity, Attribute & Domain , Entity Type & Entity Set, Types of Attributes, Super Key, Candidate Key, Primary Key, Strong and Weak entity, converting ER diagram into relational schema,		
	36 <sup>th</sup>	Binary Relationship, N-ary Relationship, Database Constraints, Mapping Cardinalities, Participation Constraint, Total Participation Constraint, Enhanced ER diagram		
13 <sup>th</sup>	37 <sup>th</sup>	Logical database design, Functional Dependency, Closure of attribute, Trivial Functional Dependency, Full Functional Dependency, Partial Dependency, Transitive Dependencies, Multi Valued Dependencies, Importance of Dependencies.	13 <sup>th</sup>	Writing fourth real world related problem focusing on both Java Language & MySQL  Doubt sessions related to writing fourth real world
	38 <sup>th</sup>	Normalization, First Normal Form (1NF), Second Normal Form (2NF) with Examples		
	39 <sup>th</sup>	Third Normal Form (3NF) with examples		

<b>14<sup>th</sup></b>	<b>40<sup>th</sup></b>	<b>DDL statements, DML statements, DCL statements with examples</b>	<b>14<sup>th</sup></b>	<b>Writing fifth real world related problem focusing on both Java Language &amp; MySQL</b>  <b>Doubt sessions related to writing fifth real world</b>
	<b>41<sup>st</sup></b>	<b>Joins- equi join, natural join, inner join, outer join, left outer, right outer and full outer join</b>		
	<b>42<sup>nd</sup></b>	<b>Sub queries, Views</b>		
<b>15<sup>th</sup></b>	<b>43<sup>rd</sup></b>	<b>Database design Issues, SQL fine-tuning</b>	<b>15<sup>th</sup></b>	<b>Writing sixth real world related problem focusing on both Java Language &amp; MySQL</b>  <b>Doubt sessions related to writing sixth real world</b>
	<b>44<sup>th</sup></b>	<b>Revision of Unit 4</b>		
	<b>45<sup>th</sup></b>	<b>Sessional Test 2</b>		