

BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI, HYDERABAD CAMPUS
INSTRUCTION DIVISION , FIRST SEMESTER 2012-2013
COURSE HANDOUT (PART-II)

03/08/2012

In addition to part-I (General Handout for all courses appended to the time table) this portion gives further specific details regarding the course.

Course Number : CS F213/IS F213
Course Title : **Object Oriented Programming and Design**
Instructor-In-Charge : Aruna Malapati
Instructor : Ms. K.Kavitha , Mr.Sadasiva Rao

Course Description:

Basics of Object Oriented Programming – objects, classes, polymorphism, inheritance, static and dynamic binding. Object Oriented Programming using Java-classes, interfaces, inheritance, polymorphism, method dispatch, features for encapsulation and modularity.

Objective:

To introduce the concepts and the practice of Object Oriented Programming using Java as the tool for program development.

Scope :

This course will introduce the most common and fundamental concepts in Object Oriented Programming. It will cover the features of the programming language Java and parts of the Java Core API to the extent these are helpful in practicing Object Oriented Programming. After learning this course, students will have good understanding of OO design and Java programming.

Text Book:

T1: Object Oriented Design & Patterns, Cay Horstmann, John Wiley & Sons, 2004

References:

- R1.** The complete Reference Java 2, 5th Edition, Herbert Schildt, Tata McGraw Hill Publishing
- R2.** Java™ Design Patterns – A Tutorial, James W. Cooper, Addison-Wesley, 2000

Lecture Schedule:

Lecture No.	Learning Objectives	Topics to be covered	Chapters
PART I (Object Oriented Basics and Java Programming Fundamentals)			
1-2	Object Oriented Programming Basics and Introduction to UML	Object (s), Class(s), Pillars of OOP, Attribute(s), Operation(s), Class and Interface Notation(s) in UML, Visibility Mode(s),	-R1 for OOP Basics -For UML class Notes
3		Java Programming Syntax, Compilation and Execution of Java	T1(Ch1 - 1.7 ; Ch7 - 7.1)

		Applications and Introduction to Java Type System, Introduction to Java API Classes and Packages	Class Notes
4	Java Programming Basics	Primitive Type(s), Java Type vs Java Value, Differences in C and Java , Sample Java Application (Reading input in Java)	T1(Ch1-1.3,1.4, 1.10)
5	Class definition	Defining Class(s) in Java, Adding Attribute(s) and Operations, Access Modifier(s), Object Creation (Role of constructors), Introduction to Strings	T1(Ch1 – 1.5, 1.9) R1(Ch 6)
6	Polymorphism in Java	Method Overloading vs Method Overriding [Also Constructor overloading], Object as Parameters	T1(Ch1 - 1.6) R1(Ch7)
7	final and static keywords in Java	Learning the use of final and static keywords in Java , static block in Java	T1(Ch1 – 28) R1(Ch 7)
8 - 9	Learning Arrays and Strings in Java	Arrays and Multi-dimensional arrays, Strings, StringBuffer, StringTokenizer	T1(Ch1 – 1.9, 1.12) R1(Ch 4, Ch 13)
10 - 11	To learn Inheritance in Java	Inheritance, Abstract classes, Instance variable hiding, Method overriding	R1 (Ch8) T1 (Ch 6)
12 - 13	To learn interfaces in Java	interfaces, Comparator and Comparable interfaces, Inner classes ,Anonymous classes	T1(Ch 4)
14 - 16	Java's Collection Framework	Collection Class(s) & Interfaces, ArrayLists, Vectors, LinkedLists, Iterators and ListIterators	R1 (Ch 15) T1 (Ch 8 – 8.3)
17 - 19	Exception Handling	Exception classes , Checked vs Unchecked Exceptions, Throw vs Throws clauses	T1 (Ch1 – 1.8) R1 (Ch 10)
20	Java Object Model	Shallow and Deep Copy, Object Class , Type Inquiry	T1(Ch7 – 7.1, 7.2, 7.3, 7.4)
PART II (Object Oriented Design Process)			
21	To Understand and learn the Object – Oriented Design Process	Understanding Class Relationships, Multiplicities (Cardinality)	T1 (Ch2 – 2.3, 2.4)
22		Identifying Use cases , Actors from a given Software Requirement Specifications, Use Case Realization	T1 (Ch2 – 2.6)
23 - 24		Identifying Classes , Attribute(s), Methods [Both by using Noun Phrase Analysis and CRC Cards]	T1 (Ch2 -2.3, 2.4, 2.7)
25		Drawing Class Diagram [Dependency Diagram, and Relationship diagrams]	T1 (Ch2 – 2.8)
26		Sequence Diagrams , State Diagrams	T1 (Ch2 – 2.9, 2.10)
27	Class Design Principles	Encapsulation Rule, Analyzing the quality of Class OR Interface design	T1 (Ch3 – 3.4, 3.5)
28	Learning Programming by Contract	Adding Preconditions, Assertions, Post conditions, Class Invariants	T1(Ch3 – 3.6)

PART III (Object Oriented Design Patterns)			
29 - 30	Event Handling Programming	Understanding Java's Delegation Event Model, Event Classes [ActionEvent, MouseEvent], Listener Interfaces [ActionListener, MouseListener]	R1 (Ch 20) T1(Ch4 – 4.7)
31 - 36	GUI Programming, Learning User Interface Components	AWT Hierarchy of classes, Introduction to Swing Package, Frames , Panels, JLabels, Scroll Bars, JTextAreas , JTextFields, Layout Managers	T1(Ch4 – 4.7; Ch6 – 6.6) << Class Notes>>
37- 40	Learning Java Design Patterns	Pattern Basics, Iterator Pattern	T1(Ch5 -5.1, 5.2)
		Model View Controller Architecture and Observer Pattern	T1(Ch5 -5.3)
		Strategy Pattern, Decorator Pattern	T1(Ch5 -5.4, 5.6)
		Composite ,Singleton Pattern	T1(Ch5 -5.5; Ch10 – 10.5)
		Command Pattern, Adapter	T1(Ch10 – 10.1, 10.2)

Evaluation

Component	Mode	Date & Time	Weightage
Test-1	Closed Book	22/9 9.30 – 10.30AM	20%
Test-2	Closed Book	03/11/2012 9.30 – 10.30AM	20%
Weekly Practical Labs	Open Book		10%
Online/Lab	Open Book		15%
Comprehensive	Part Open	07/12 AN	35%

Make-up-Policy

Make-up will be strictly granted on prior permissions and on justifiable grounds only. Students applying for make-up on medical grounds need to submit confirmation letter from the concerned warden. NO MAKEUP would be granted for online/Lab Examination.

Course Notices

All notices pertaining to this course will be displayed on the CS&IS Notice Board.

Chamber Consultation

To be announced in the Classroom.

**Instructor-In-Charge,
CS F213**