

TOURO COLLEGE COURSE SYLLABUS

LANDER COLLEGE

DEPARTMENT: Computer Science
COURSE TITLE: Advanced Topics in Object-Oriented Programming
COURSE NUMBER: MCO 368
PREREQUISITES: MCO 264
CREDIT HOURS: 3
DEVELOPER: Jonathan Robinson
LAST UPDATE: December 27, 2003

COURSE DESCRIPTION

This course will utilize a current object oriented programming language to explore advanced OOP concepts such as: classes, objects and encapsulation; inheritance and polymorphism; static and dynamic binding; and case studies in OOP implementation.

COURSE DEPARTMENTAL OBJECTIVES

Students should be fluent in C++ programming and the course should extend that background to Java and apply the students' knowledge to Java concepts not found in C++ such as event handling, graphics, windowing, threads and inner classes.

The student will be able to design and implement significant programs using the following Java features: applets, applications, control structures, methods, arrays, classes and inner classes, interfaces, Strings and Characters, graphics and Java 2D, GUI's, exception handling, multithreading, file processing.

COURSE INSTITUTIONAL OBJECTIVES

This course applies the students programming and analytical skills to solving problems students may encounter in their professional careers. Furthering professional career interests, fostering analytical and quantitative thinking and developing students' abilities to solve problems and interpret data are institutional goals this course is designed to fulfill.

COURSE CONTENT

- Applets
 - Applet Methods and Life Cycle,
 - Compilation, Byte Code,
 - JDK versions and JRE's
- Applications
 - Portability, Efficiency
 - Command line arguments

- o Variables
- o Memory Concepts
- o Primitive Types
- o Arithmetic
- o Compound Assignment Operators
- o Increment and Decrement Operators
- Control Structures
 - o Equality and Relational Operators
 - o if else Selection Statement
 - o while and do...while Repetition Statement
 - o for Repetition Statement
 - o switch Multiple-Selection Statement
 - o break and continue Statements
 - o Labeled break and continue Statements
 - o Logical Operators
- Methods
 - o Program Modules in Java
 - o Math-Class Methods
 - o Method Declarations
 - o References and Reference Parameters
 - o Argument Promotion
 - o Java API Packages
- Arrays
 - o Declaring and Creating Arrays
 - o Passing Arrays to Methods
 - o Sorting Arrays
 - o Multidimensional Arrays
- ADT's, Inner classes and Interfaces
 - o Class Scope
 - o Controlling Access to Members
 - o Referring to the Current Object's Members with this
 - o Constructors
 - o Using Set and Get Methods
 - o Composition
 - o Garbage Collection
 - o Static Class Members
 - o Final Instance Variables
 - o Packages
- Strings and Characters
 - o Class String and its methods
 - o Class StringBuffer and its methods
- Graphics and Java 2D
 - o Graphics Contexts and Graphics Objects

- o Color Control
- o Font Control
- o Drawing Lines, Rectangles and Ovals
- o Drawing Arcs
- o Drawing Polygons and Polylines
- o Java2D API
- GUI's
 - o Basic Swing Components
 - Event Handling
 - JLabel, TextFields, JButton, JCheckBox and JRadioButton, JComboBox, JList
 - Mouse Event Handling and Key Event Handling
 - Adapter Classes
 - o Advanced Swing Components
 - JPanel and JSlider
 - JTextArea
 - Creating a Customized Subclass
 - Windows, Menus with Frames
 - Layouts
- Exception Handling
 - o Java Exception Hierarchy
 - o try catch block
 - o Rethrowing an Exception
 - o finally Clause
 - o Stack Unwinding, printStackTrace, getStackTrace and getMessage
 - o Chained Exceptions
 - o Declaring New Exception Types
 - o Constructors and Exception Handling
- Multithreading
 - o Thread States: Life Cycle of a Thread
 - o Thread Priorities and Thread Scheduling
 - o Creating and Executing Threads
 - o Thread Synchronization
 - o Daemon Threads
 - o Runnable Interface
- File Processing
 - o Files and Streams
 - o Class File
 - o Creating, Reading Data and Updating from a Sequential-Access File
 - o Creating, Reading Data and Updating from a Random-Access File
 - o Reading Data Sequentially from a Random-Access File