SYRACUSE UNIVERSITY

CSE 283
Introduction to Object-Oriented Design
2019-2020
(3 credits)

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CSE 283 is a one-semester software-engineering course. The course focuses on software design principles. The course covers the design of computer programs including top-down and object-oriented design, analysis, testing, user interface, documentation, data structures and graphic I/O. Applications are drawn from science and engineering, and are programmed in C++ OR Java.

Course Outline

Week 1: C Machine, Overview and Course Objectives; Course Overview and Student Expectations; A Virtual Machine - The C Machine; Higher Level Language and the C++ Superset
Week 2: Functional Decomposition - Classical Design; Problem Statement Analysis; Modularity - identifying small pieces; Testability
Week 3: Reuse - Object-Oriented Design; Calling functions to repeat operations; Difficulties in parameter passing; Global versus Local variables
Week 4: Object-Oriented Design: Class and Object Models; What are Objects?; What are Classes?; Multiplicity, Aggregation, Cardinality, and other relationships
Week 5: Object-Oriented Design: Dynamic and Functional Models; External and Internal Interaction with regard to Objects; What happens when? Dynamic Modeling Member Functions
Week 6: Encapsulation - Classes; Class Syntax; Constructors; Access Rights
Week 7: Overloading and Defaults; Use forms that are already known, for the convenience of the programmer; Defaults make parameter passing easier and more flexible; Operator Overloading
Week 8: Arrays of Objects; Classes are User defined types; Constructor Problems; Multi-dimensioned Arrays
Week 9: Pointers to Objects; Objects within Objects; Sharing objects: Passing by reference; Friends
Week 10: Inheritance; Refining the Class; Inheritance Syntax; Protection and Multiple Inheritance
Week 11: Dynamic Allocation and Recursion; New and Delete; Constructor Execution and Destructors; Recursion Example
Week 12: Polymorphism; Reuse more Classes; Virtual members; Abstract Classes
Week 13: Templates and Manipulators; What is a template? Ultimate Reuse? Linked List Example
Week 14: Java and the Internet; The Java Virtual Machine; Appellate; Enhanced Home Page Design
Week 15: Review and Final Exam

(Over)

Title/Author (Publisher)	Price Per Copy	Ordering Source
Problem Solving with C++, 10th Edition; Savitch, W. ISBN: 9780134448282	$158.00	Pearson Phone: 800-848-9500
Java Software Solutions: Foundations of Program Design, 9th Edition; Lewis & Loftus (Addison-Wesley) ISBN: 9780134462028	$158.00	Pearson Phone: 800-848-9500

Prices are subject to change.