_____SOUTH SEATTLE COMMUNITY COLLEGE_____

Academic Programs

COURSE OUTLINE
Revision: Mike Steffancin, February 2008

DEPARTMENT: Academic Programs

CURRICULUM: Computer Science

COURSE TITLE: Object-Oriented Programming II (Java)

COURSE NUMBER: CSC 143

TYPE OF COURSE: Academic Transfer
Special Requirement Met: Quantitative/Symbolic Reasoning

COURSE LENGTH: 1 quarter

CREDIT HOURS: 5

LECTURE HOURS: 55

LAB HOURS: 0

CLASS SIZE: 25

PREREQUISITES: CSC/ENGR 142

COURSE DESCRIPTION:

Continuation of CSC 142. Covers classes and interfaces, inheritance, graphics, exceptions, stream I/O, recursion, analysis of algorithms and some dynamics structures (lists, stacks, trees). Continues the study of programming by introducing advanced Java language features and new programming topics. Learn the tools for building efficient software systems: dynamic data allocation, recursion and analysis of algorithms.

STUDENT LEARNING OUTCOMES ADDRESSED:

1. Communication – Students will read and write complex technical documents.
2. Computation – Computation and algorithm analysis are used to further study programming and general computer science.

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STUDENT LEARNING OUTCOMES ADDRESSED: (cont.)

3. Critical Thinking and Problem Solving – Identify problems and evaluate alternative solutions, and apply appropriate analytical methods to develop optional solutions to complex programming problems.
4. Technology – Understand basic computer systems and structured programming using Java language.
5. Information Literacy – Access and use information from variety of resources/data including the Internet.
6. Personal Responsibility – Take pride and value in own work. This is stressed throughout the course by enabling and assisting the students in the development of non-trivial software systems, and encouraging students to take pride in their accomplishments.

GENERAL COURSE OBJECTIVES:
Upon successful completion of this course, the student will be able to demonstrate the following:

1. Apply programming concepts to mathematics, modeling, and a broad range of other subjects.
2. Acquired knowledge of practical uses for Java and the object-oriented paradigm.
3. Further understanding of modern programming techniques and methods with a focus on analysis and design, as well as common design patterns.
4. Ability to design appropriate class hierarchies for specific problems.
5. Proficiency in writing advanced programs with Java by utilizing the Java2D API, in-depth GUI design principles, class design guidelines, client/server networking principles, multithreading concepts, exceptions and associated error handling, files, streams, and simple data structures.
6. Application of these principles in the development non-trivial software systems.

| TOPICAL OUTLINE: | | APPROX. HOURS |
|---|---|---|
| I. | Course introduction; course tools; programming as modeling; inheritance | 3 |
| II. | More on inheritance; interfaces and data types; testing | 5 |
| III. | Graphical user interfaces design and Swing basics; model-view-controller (MVC); packages and scope | 5 |
| IV. | Event-driven programming; event adapters, inner classes, anonymous inner classes; programming by contract | 5 |
| V. | Exception handling; streams and files | 5 |

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| TOPICAL OUTLINE: (cont.) | | APPROX. HOURS |
|---|---|---|
| VI. | Collections and their implementation | 5 |
| VII. | Linked list; stacks and queues | 5 |
| VIII. | Program efficiency and complexity | 3 |
| IX. | Recursion; binary search; sorting | 7 |
| X. | Trees; binary search trees | 7 |
| XI. | Hashing | 5 |
| | Total | 55 |

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DATE: February 2008

Course Prefix and Number: CSC 143
Course Title: Computer Programming II

| SLO # | Included in Course Objective Number | SSCC Student Learning Outcomes |
|---|---|---|
| SLO 1.1 | 1 | Communication - Read and listen actively |
| SLO 1.2 | | Communication - Speak and write effectively |
| SLO 2.1 | 2 | Computation - Use mathematical operations |
| SLO 2.2 | 2 | Computation - Apply quantitative skills |
| SLO 2.3 | 2 | Computation - Identify, interpret, and utilize higher level mathematical and cognitive skills |
| SLO 3.1 | | Human Relations - Use social interactive skills to work in groups effectively |
| SLO 3.2 | | Human Relations - Recognize the diversity of cultural influences and values |
| SLO 4.1 | 3 | Critical Thinking and Problem Solving - |
| SLO 5.1 | 4 | Technology - Select and use appropriate technological tools |
| SLO 6.1 | 6 | Personal Responsibility - Be motivated and able to continue learning and adapt to change |
| SLO 6.2 | 6 | Personal Responsibility - Value one's own skills, abilities, ideas and art |
| SLO 6.3 | 6 | Personal Responsibility - Take pride in one's work |
| SLO 6.4 | | Personal Responsibility - Manage personal health and safety |
| SLO 6.5 | | Personal Responsibility - Be aware of civic and environmental issues |
| SLO 7.1 | 5 | Information Literacy - Access and evaluate information |
| SLO 7.2 | 5 | Information Literacy - Use information to achieve personal, academic, and career goals, as well as to participate in a democratic society |

PREPARED BY: Mike Steffancin
DATE: August 2009