CS 162 – Introduction to Computer Science II

Catalog Description: Basic data structures. Computer programming techniques and application of software engineering principles. Introduction to analysis of programs. Lec/lab.

Credits: 4

Terms Offered: Fall, Winter, Spring

Prerequisites: CS 161 and (MTH 231* or ECE 271*)

Courses that require this as a prerequisite: CS 261

Structure: Three 50-minute lectures per week, and one 110-minute laboratory per week

Instructors: D. Forkner, W. Wong

Course Content:
- Software quality factors
- OOP principles
- Algorithm analysis
- Java Collections API (stacks, queues, priority queues, linked lists, vectors, arrays, maps)
- Recursion
- Sorting algorithms

Measurable Student Learning Outcomes:
At the completion of the course, students will be able to…

1. **Design and implement** programs that require
   a. multiple classes, structures
   b. hierarchies of classes that use inheritance and polymorphism
   c. an understanding of abstraction, modularity, separation of concerns, and exception handling
   (Level 4; ABET Outcomes: b, C, I, k)

2. **Construct** and use basic linear structures (arrays, stacks, queues, and various linked lists) in programs, and be able to describe instances appropriate for their use. (Level 4; ABET Outcomes: A, B, C, I, K)

3. **Classify** moderately complicated algorithms in these complexity classes: O(1), O(log n), O(n), O(n log n), and O(n^2) (Level 3; ABET Outcomes: A, J)

4. **Develop** test-data sets and testing plans for programming projects (Level 4; ABET Outcomes: A, c, I, K, L)

5. **Produce** recursive algorithms, and choose appropriately between iterative and recursive algorithms. (Level 3; ABET Outcomes: A, j)

Evaluation of Student Performance:
- 20% Midterm(s)
- 30% Final Exam
- 50% Labs and Assignments
Learning Resources:
- *Big Java* (3rd Edition), Cay Horstmann (required)
- Computer Science Platform For Learning (OSWALD - details at http://beaversource.oregonstate.edu/projects/cspfl)

Students with Disabilities:
Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 737-4098.

Link to Statement of Expectations for Student Conduct:
http://oregonstate.edu/admin/stucon/achon.htm

Revised: 5/22/2009