Fall 2015

CSCI 2120

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Software Design and Development II  
CSCI 2120 Section 001  
Fall Semester 2015  

Dr. Christopher Summa  
Office: MATH 312A  Phone: (504) 298-9280  
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Meets: 9:00PM - 9:50PM M,W,F  in 205 Education Bldg.  
Office Hours: Tues, Fri 10AM-Noon, Wed 3PM-5PM  
other times by appointment only. Office Hours will be held in Math 312-A.

Prerequisite: CSCI 1583  
with a grade of C or better or consent of department;  
concurrent registration in CSCI 2121 is required.

Text: Dietel and Dietel, Java,  
How to Program, (Late Objects Version) 10th Ed.

Course Content:  
This course is an introductory course in Computer Science with an emphasis on programming in a high-level, object-oriented language. This supporting language is Java. The course is centered on the design and implementation of simple objects, and employs an iterative specify/design/implement/test strategy. The topics covered (roughly Chapters 12 through 25, omitting Chapter 16) will be (we reserve the right to adjust as the term progresses):

- Object-Oriented Design
- GUI Components
- Files, Streams, & Serialization
- Recursion
- Searching & Sorting
- Generics & Basic Data Structures
• Multithreading
• Networking

Laboratory:
The purpose of the lab (CSCI 2121) is to give you an environment to try out concepts in software design via the development of software fragments with a lab assistant. Attendance and completion of lab work is mandatory.

Grading:
(1) Laboratory work (CSCI 2121) will comprise 10% of your final grade, homework/programming assignments 50%, and tests 40%. The test component will be computed as follows: Two in-class, closed-book announced tests plus the final exam grade counted twice gives four grades. The highest three will be used to compute the test component of your final grade. For example, if your in-class test grades are 70 and 80, and your final exam grade is 75, the grades 80, 75, 75 (highest three of 70, 80, 75, 75) will be used for the average. There will be weekly programming assignments.

(2) You will receive the same grade for CSCI 2120 and CSCI 2121 to be computed as described in the previous paragraph. Administrative constraints prevent us from offering the lecture and lab components as a single course. However, they are to be treated as such, hence the single, uniform grade.

(3) All work is graded on a numerical (percentage) basis. The correspondence between numerical and letter grades is given as follows:

A: >= 90,
B: 80 - 89,
C: 70 - 79,
D: 50 - 69,
F: < 50.

(4) It is expected that all homework will be turned in on time. Lateness penalties are:
• 1 day late - 10% off;
• 2 days late - 20% off;
• 3 days late - 40% off;
• >3 days late – not accepted

Note: We count school days (Sundays and holidays are not included).

(5) Homework Submission: Homework submissions through gitlab will be required for this course. Git is a tool commonly used by professional programmers for source code control, and you will be trained in the first week to install and use it. Effective use of our gitlab server will be the responsibility of the student. No exceptions. You will also be required to submit a hardcopy of your work. Failure to follow these requirements will result in a grade of zero.
(6) No make-ups for graded work (either tests or homework) will be given except for a legitimate (e.g., medical) reasons.

(7) Questions about the grading of student work should be raised within 72 hours of its return. After that time frame, issues raised will risk not being entertained.

(8) Students should retain all returned graded work, in case there are issues raised about the grade.

(9) The "I" grade (for Incomplete) is given only in exceptional circumstances, (e.g. missing the final exam because of a surgery).

Attendance:
The UNO Senate (Feb. 20, 2002) has made the taking of attendance a requirement for "developmental, 1000, and 2000 level courses." Attendance will therefore be taken at each class meeting. Although not a formal component of the computation of grades, good attendance will impact final grades in borderline cases. Important course content is often introduced outside of the published sources and/or scheduled presentations.

Expected Outcomes:
Upon completion of this course, students will:
• Be able to identify, discuss, and use object oriented programming techniques
• Be able to identify and use best practices in documenting computer code.
• Be able to design software systems with multiple interacting classes
• Be able to design simple multithreaded applications
• Be able to implement a GUI-based program
• Have familiarity with the Java networking model
• Understand and be able to use both linear and tree-based data structures and understand their strengths and weaknesses
• Be exposed to, and be able to use, some common OO design patterns

Academic Dishonesty:
Finally, we must call your attention to the University's policies regarding academic Dishonesty: Academic integrity is fundamental to the process of learning and evaluating academic performance. Academic dishonesty will not be tolerated. Academic dishonesty includes, but is not limited to, the following: cheating, plagiarism, tampering with academic records and examinations, falsifying identity, and being an accessory to acts of academic dishonesty. Refer to the Student Code of Conduct for further information. The Code is available online at http://www.studentaffairs.uno.edu. In the event of academic dishonesty, the student will be assigned a grade of 0 on the exam or exercise, the student will be informed in writing of the action taken, and a copy of this letter will be sent to the Assistant Dean for Special Student Services.
Students with Disabilities:

It is University policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have disabilities that may affect their ability to participate in course activities or to meet course requirements. Students with disabilities should contact the Office of Disability Services as well as their instructors to discuss their individual needs for accommodations. For more information, please go to http://www.ods.uno.edu
Tentative Schedule:

**WEEK 1**  Aug 19-22
Refresher On Javadoc & Programming By Contract Testing (Unit vs. Functional): Junit introduction

**WEEK 2**  Aug 23-29
JUnit (cont.) and Programming By Contract (Cont.)
Refresher: Inheritance and Polymorphism
Design Patterns: Strategy and Singleton

**WEEK 3**  Aug 30-Sept 5
CH 15 Files and Streams
CH 15 Object Serialization

**WEEK 4**  Sept 6-12
CH 18 Basic Recursion
CH 18 Advanced Recursion:
  Single vs. Multiple, Direct vs. Indirect, Backtracking

**WEEK 5**  Sept 13-19
CH 12 GUI Components: Part I (Introduction To Swing)
CH 12 GUI Components: Part I (Swing, cont. & Observable)
CH 12 GUI Components: Part I (Swing, cont. & MVC Pattern)

**WEEK 6**  Sept 20-26
Review Midterm 1
MIDTERM 1

**WEEK 7**  Sept 27 - Oct 3
Midterm Review
CH 16 Generic Collections: Lists & Collection Methods

**WEEK 8**  Oct 4-10
CH 16 Generic Collections: Sets & Maps
CH 19 Searching, Sorting, and Big O: Linear & Binary Search

**WEEK 9**  Oct 11-17
CH 20 Generic Classes and Methods
Ch. 21: Custom Generic Data Structures (Lists)

**WEEK 10**  Oct 18-24
Lecture 21  Ch. 21: Custom Generic Data Structures (Stacks & Queues)
Lecture 22  Ch. 21: Custom Generic Data Structures (Trees & Binary Search)
WEEK 11  Oct 24- 31
More Design Patterns
Strings and Pattern Matching

WEEK 12  Nov 1-7
Review Midterm 2
MIDTERM 2

WEEK 13  Nov 8- 14
CH 23: Concurrency (Threads and Multithreading)
CH 23: Concurrency (Producer/Consumer Relationship)

WEEK 14  Nov 15-21
Networking

WEEK 15  Nov 22-28
Database Connectivity with JDBC

WEEK 16  Nov 29 - Dec 4
Final Review

WEEK 17  Dec 7 - 11  FINALS WEEK

FINAL EXAM: Wed, Dec.9th - 7:30AM - 9:30AM