

# CSCI 121: Computer Science II

## Syllabus – Spring 2014

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### Course Description

This course is a continuation of Computer Science I with emphasis on data and object abstraction. The major themes for the course are programming in the object-oriented paradigm, a detailed study of classic linear data structures, and recursion.

### Course Goals

Upon completion of this course, a successful student will be able to:

- Implement complete programs in Java using appropriate object-oriented style.
- Demonstrate the correctness of a class by implementing unit tests.
- Select the appropriate linear data structure for a given task.
- Design small to mid-sized software applications using OO techniques including polymorphism.

### Required Text

In addition to the following required text, supplementary readings will be given periodically during the semester.

- *Head First Java, 2nd Edition* by Kathy Sierra and Bert Bates.

You should expect to spend one to two hours before each class session working through the readings. This means reading the text for detail, working through the in-text exercises, studying the syntax for new language features, and working to learn vocabulary – not just skimming through the material before class.

### Graded Material

Below is a brief description of each of the assignments for the course. In class I will hand out detailed descriptions of the requirements and grading guidelines, as appropriate.

- **Homework** – The purpose of homework problems is for you to explore the current topic more deeply and to practice using new language features. Homework problems will be assigned nearly every class and will be due the next class session. The grade scale is as follows:

- 3 – The solution is perfect or near perfect.
- 2 – The solution has some errors or omissions but was headed in the right direction.
- 1 – The solution has serious errors or omissions, but a serious attempt was made.
- 0 – The solution shows little progress or the problem was not attempted.

At the end of the semester, your average homework grade will translated to a letter grade as follows:

|            |   |
|------------|---|
| $\geq 2.5$ | A |
| $\geq 2$   | B |
| $\geq 1.5$ | C |
| $\geq 1$   | D |
| $< 1$      | F |

- **Programming Projects** – Various programming projects will be assigned during the semester. For these assignments you will have to develop complete programs to solve a problem. The programs will incorporate material from a number of units in the course.
- **Labs** – Each Thursday session will be held in the Computer Science Computer lab, PPHAC 114. During the lab, you will be given as series of activities to complete, individually or with a partner, depending on the lab.
- **Tests** – Two tests will be given during the semester on Monday, February 24 and Monday, April 14. You may only re-schedule a test for college-approved absences or documented illness. In either case, you must contact me *before* the beginning of the test.
- **Final** – The final will be cumulative and will be given in-class on Wednesday, April 30 starting at 1:30 p.m. Any change to the final exam schedule must be approved by both me and the dean of students.

## Grade Determination

- 20% – Homework
- 35% – Programming Projects
- 20% – Labs
- 20% – Tests
- 10% – Final

All grades will be calculated on the standard scale using pluses and minuses.

## Course Policies

- **Late Policy** – I understand that life sometimes gets in the way of getting work done. Consequently, late assignments will be accepted without penalty in the class after the assignment is due. However, this policy should not be used as a crutch, and if you frequently use it I will deduct from your grade. After the next class session, late work will not be accepted unless there are exceptional circumstances.

- **Extensions** – In a similar vein, I am generous with extensions on work if you approach me *before* the day the assignment is due.
- **Absences** – Your attendance is expected at each class meeting, but I understand that students occasionally get sick, have obligations outside Moravian, and even over sleep. If you do miss class, please send me an email explaining your absence – preferably before the class session. Regardless of your reason for missing class, you are responsible for the contents of reading assignments, handouts, class activities, and class email.
- **Academic Honesty** – Except on tests, you are *encouraged* to discuss the material and work with other students in the course. This policy does not allow you to copy another student’s work verbatim – you must produce your own code or write-up of the material. Work together to learn the concepts, but keep in mind that you are ultimately responsible for the material on the tests.
- **Disabilities** – Students who wish to request accommodations in this class for a disability should contact the assistant director of learning services for academic and disability support at 1307 Main Street, or by calling 610-861-1510. Accommodations cannot be provided until authorization is received from the Academic Support Center.

## Schedule

| Date       | Reading(s)           | Topic(s)                                    |
|------------|----------------------|---|
| M Jan 13   |                      | • Day 1                                     |
| W Jan 15   | • Chapter 1          | • Basic Control Structures                  |
| F Jan 17   | • Chapter 2          | • OO Theory and Basic Objects               |
| M Jan 20   |                      | • No Class, MLK                             |
| W Jan 22   | • Chapter 3          | • Variables, References, and Arrays         |
| F Jan 24   | • Chapter 4          | • Methods and Object State                  |
| M Jan 27   | • Chapter 9: 235-249 | • Stack, Heap, and Constructors             |
| W Jan 29   | • Chapter 9: 258-271 | • Object Death and the Garbage Collector    |
| Fri Jan 31 |                      | • Object Wrap-Up                            |
| M Feb 3    | • Chapter 5: 95-103  | • Testing                                   |
| W Feb 5    | • Chapter 5: 104-123 | • <code>for</code> Loops and Program Design |
| F Feb 7    | • Chapter 6: 125-139 | • ArrayLists                                |
| M Feb 10   |                      | • Linked Lists                              |
| W Feb 12   |                      | • Linked List Insertions                    |
| F Feb 14   |                      | • Linked List Deletions                     |
| M Feb 17   | • Handout            | • Big-Oh Notation                           |
| W Feb 19   |                      | • List Efficiency                           |

| <b>Date</b>            | <b>Reading(s)</b>      | <b>Topic(s)</b>                              |
|------------------------|------------------------|--|
| F Feb 21               |                        | • List Efficiency                            |
| M Feb 24               |                        | • Test #1                                    |
| W Mar 26               | • Chapter 6: 140-154   | • Using Libraries                            |
| F Feb 28               | • Chapter 6: 155-164   | • Imports and Library Documentation          |
| M Mar 3 –<br>F Mar 7   |                        | • Spring Break                               |
| M Mar 10               | • Chapter 7: 165-182   | • Inheritance                                |
| W Mar 12               | • Chapter 9: 250-257   | • Constructors and Inheritance               |
| F Mar 14               | • Chapter 7: 183-190   | • Polymorphism                               |
| M Mar 17               | • Chapter 7: 191-196   | • Overloading                                |
| W Mar 19               | • Chapter 8: 197-206   | • Abstract Base Classes                      |
| F Mar 21               | • Chapter 8: 207-223   | • Object and Multiple Inheritance            |
| M Mar 24               | • Chapter 8: 225-234   | • Interfaces                                 |
| W Mar 26               |                        | • OO Wrap-Up                                 |
| F Mar 28               | • Chapter 10: 273-286  | • <code>static</code> and <code>final</code> |
| M Mar 31               | • Chapter 10: 287-293  | • Wrapping Primitives and Auto-Boxing        |
| W Apr 2                | • Chapter 11: 315-329  | • Exceptions                                 |
| F Apr 4                | • Chapter 11: 330-338  | • More Exceptions                            |
| M Apr 7                | • Chapter 16: 5229-535 | • Collections                                |
| W Apr 9                | • Chapter 16: 536-555  | • Generics                                   |
| F Apr 11               | • Chapter 16: 556-579  | • More Containers                            |
| M Apr 14               |                        | • Test #2                                    |
| W Apr 16               | • Online Source        | • Recursion                                  |
| F Apr 18 –<br>M Apr 21 |                        | • Easter Break                               |
| W Apr 23               |                        | • Recursion                                  |
| F Apr 25               |                        | • Review                                     |

The details of this syllabus and schedule are subject to change based on our progress through the material.