CSCI 221: Computer Programming II
Spring 2020

Course Information

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Meeting Time. MWF 11:30am-12:20pm.

Meeting Place. Harbor Walk East 334

Webpage. http://sunjz.people.cofc.edu

Required Textbook. https://learn.zybooks.com/
Subscribe with zyBook Code: COFCCSCI221SunSpring2020
Please use your CofC email and offical name to create account. Personal subscription to the text is essential, as completion of the interactive components will contribute to your course grade.

Online Resources.
- A beginner's Java Tutorial.
  https://www.w3schools.com/java/
- Online Java Compilers
  https://www.tutorialspoint.com/compile_java_online.php
  https://www.jdoodle.com/online-java-compiler/

Course Description

This course further develops object-oriented programming introduced in CSCI 220. Topics include file input/output, inheritance and polymorphism, exceptions, error handling and algorithm analysis.

Course Pre-requisite: CSCI 220 & 220L – grade of C- or better.

Course Pre- or Co-requisite: Discrete structures I, Math 207.

Learning Outcomes

1. Apply the software development process in problem solving. Specifically, focus on coding to a specification this includes contracts and typing (e.g., pre- and post-conditions), using pseudo-code to draft an algorithm before it becomes code, test driven development, range and boundary checking, and unit testing.
2. Learn Java syntax. This includes constants and variables, assignment, arithmetic operations, relational operators, logical operators (including short–circuit), selection statements, repetition statements, and data types (i.e. reference, primitive) and primitive wrapper classes.
3. Write programs that use IO operations. This includes reading/writing text from standard IO, reading/writing structured data (e.g. csv or imaging data) from a file.
4. Write programs that store and manipulate data using one- and two-dimensional arrays. This includes iteration and common tasks such as finding max/min, summing, making copies (shallow and deep copy operations) and other aggregate operations.
5. Design classes and apply them in program development. This includes object instantiation, methods (e.g. constructors, getters, setters, helpers), overloading and overriding (e.g toString, equals), static versus non–static methods/variables, access qualifiers (public, protected, private), and "this" reference.
6. Write programs that incorporate object-oriented design principles. This includes inheritance (concrete classes, abstract classes and interfaces, is-a relationships), composition (has-a relationship) and class hierarchies. Identify scenarios in which inheritance or composition is appropriate
7. Apply exceptions in program development. This includes defining exception classes using inheritance, 'throws' and 'try/catch' syntax, and understanding the difference between checked and un-check exceptions.
8. Analyze recursive algorithms (such as factorial, fibonacci, list length, and binary search) and explain/trace using a stack data structure.
9. Design, implement, and test a dynamic array-based collection (such as an ArrayList, OrderedList, PriorityQueue,). This includes implementing an interface, managing both size and capacity, and traversal via an iterator.
10. Code a multi-class project/application that applies the object-oriented design principles covered in this class. (Multi-class is defined as a minimum of 4 classes.)

Course Work

Zybook Interactive Exercises	10%
About Ten Programming Assignments	20%
About Five Programming Labs	20%
Three Tests	25%
Final Exam	25%

Final Grade Scale

	93 – 100 = A	90 – 92 = A-
87 – 89 = B+	83 – 86 = B	80 – 82 = B-
77 – 79 = C+	73 – 76 = C	70 – 72 = C-
67 – 69 = D+	63 – 66 = D	60 – 62 = D-
59 or below = F		

- **Tests**
  - Three tests are in class. Each counts for 10 points towards the final grade.
  - All tests are on paper and pencil, and all are close-book, close-notes.
    - Your lowest test score can be counted for half of the weight.
    - For example, if your three test scores are 9, 4, 8, then your total is
      $9 + 4/2 + 8 = 9 + 2 + 8 = 19$ out of 25.

- **Final Exam**
  - Final exam is comprehensive. Questions may come from any section unless being exculded by instructor. There is no study guide.
  - It's on paper and pencil and is close-book.
  - You may use one cheat sheet, i.e., a US Letter page written in front and back.
  - It counts for 25 points towards the final grade.

- **Challenge to Grading**
  - Grading can only be challenged for mis-calculation or mis-copy type of errors.
  - No extra work will be offered to compensate a poor score.
  - Minor curve to the overall class or minor grace to a certain student at the borderline of two letter grades is possible. However it cannot be asked for. It's the instructor's sole decision without any obligation.

C of C Policies

Disabilities
Any student who feels he or she may need an accommodation based on the impact of a disability should contact me individually to discuss your specific needs. Also, please contact the College of Charleston, Center for disability Services http://www.cofc.edu/~cds/ for additional help.

Student Honor Code
I expect you to abide by the Honor Code and the Student Handbook: A Guide to Civil and Honorable Conduct. If you have a question about how to interpret the Honor Code, ask before acting! I encourage collaboration, but you must document it. Thus, each student will submit their own homework and, when collaborating, provide a reference to those people and documents consulted.

Attendance
ATTENDANCE IS SUPER STRONGLY ENCOURAGED. Attendance at regular classes is not mandatory, but is a great way to engage the course material and to ask questions. Attendance for tests and the exam is expected (rescheduling for sickness is accommodated). Please do not attend class if you are sick or believe you are becoming ill. It is best to document your absence through an absence report in Undergraduate Academic Services.

Electronic Devices
The use of electronic devices, both stand-alone and network capable, will play an increasingly important roll in teaching and learning at the College of Charleston, including their use in our classrooms. Just be respectful about unnecessary distractions to you and to others seated around you.

How to report an absence
Students should come to 67 George Street (white house next to Stern Center) to discuss absences and fill out the appropriate forms. Or get forms online at: http://www.cofc.edu/studentaffairs/general_info/absence Forms can be faxed to the College at 953-2290.

Students will need documentation for health, personal or emergency situations. Athletic Teams and school-sponsored trips will have documented lists of students participating on our letterhead as early in the semester as we get the information from the organization. We would like all information on scheduled outings to reach us at least two full weeks in advance. We will then turn the information back to the coach or advisor.

Academic Integrity
Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when identified, are investigated. Each incident will be examined to determine the degree of deception involved.
Incidents where the instructor determines the student's actions are related more to
a misunderstanding will be handled by the instructor. A written intervention designed to help prevent the student from repeating the error will be given to the student. The intervention, submitted by form and signed both by the instructor and the student, will be forwarded to the Dean of Students and placed in the student's file.

Cases of suspected academic dishonesty will be reported directly by the instructor and/or others having knowledge of the incident to the Dean of Students. A student found responsible by the Honor Board for academic dishonesty will receive a XF in the course, indicating failure of the course due to academic dishonesty. This grade will appear on the student's transcript for two years after which the

student may petition for the X to
be expunged. The student may also be placed on disciplinary probation, suspended (temporary removal) or expelled (permanent removal) from the College by the Honor Board.

Students should be aware that unauthorized collaboration–working together without permission– is a form of cheating. Unless the instructor specifies that students can work together on an assignment, quiz and/or test, no collaboration during the completion of the assignment is permitted. Other forms of cheating include possessing or using an unauthorized study aid (which could include accessing information via a cell phone or computer), copying from others' exams, fabricating data, and giving unauthorized assistance.

Research conducted and/or papers written for other classes cannot be used in whole or in part for any assignment in this class without obtaining prior permission from the instructor. Students can find the complete Honor Code and all related processes in the Student Handbook at
http://studentaffairs.cofc.edu/honor-system/studenthandbook/index.php