COURSE DESCRIPTION: Design, implement computer solutions using object oriented technology. CS I curriculum: data types, algorithms, abstraction, classes, methods, inheritance, exceptions, arrays, control structures, sorting and searching. Previously COMPU 142

5 CREDITS. PRE-REQUISITES: MATH& 141 or MATH 111 (min. 2.0) or instructor's permission
Instructor: **Robert Shields**, Email: **rshields@shoreline.edu**
Office hours: 30 minutes before or after (depends on room availability) class & by appointment
Final exam: S1 11:30-1:20 Wed. 10 Dec. S2: S1 11:30-1:20 Thurs. 11 Dec.

COURSE OBJECTIVES:

Upon successful completion of this course, the student should be able to:

Reason clearly using varied analytic and creative approaches

- Solve problems given an algorithm
- Apply computational models and systematic , math-based problem solving strategies
- Analyze reasoning, design and effectiveness of alternative solutions
- Design experiments to test alternative solutions and determine if they meet specifications
- Analyze and explain syntax, semantics and practical effects of programming statements and organization
- Use the basic constructs of the Java programming language to write a correct, efficient and maintainable application program.
- Analyze real-world problems in quantitative terms and formulate programming solutions.
- Describe object-oriented concepts and structures in Java.
- Design and implement algorithms typically used in computer programming.

Communicate and interact respectfully through critical and imaginative expression

- **Work cooperatively in small groups to produce a correct, efficient and maintainable program**.

- **REQUIRED COURSE TEXT:**
  - **BIG JAVA:EARLY OBJECTS**
    5th ed, Cay *Horstman* **ISBN:** 9781118431115 **Wiley** $62-147

- **SOFTWARE USED:**
  - Java JDK/JRE 7 (*available in lab*) -- available **free** from http://www.oracle.com/technetwork/java/javase/downloads/index.html *Installation Instructions*
  - Jgrasp 2.0.0 , available **free** from *http://www.jgrasp.org*
  - NetBeans 7.2.1 (*in lab*) available **free** from www.netbeans.org/
    (Other environments may be used with permission of the instructor...although help may be limited)
- **PROGRAMMING STYLE**: -- Appendix I

OTHER REQUIRED MATERIALS:

- One or two 1GB USB flash drives to backup and submit work, writing material to take notes
- A Web browser - Google Chrome, Mozilla Firefox, Safari, Opera or Internet Explorer - version 6.0 or higher. Canvas seems to work better with Firefox.
- Ability to use Canvas
- An SCC email account and the knowledge of how to send and receive email with attachments.
- The ability to connect uninterruptedly to the Internet, to navigate the Web (use a browser), and handle multiple open windows.
- ability to zip, unzip, open, close, and save files (WinZip— http://www.winzip.com/ddchomea.htm or some other packing/unpacking utility—possibly the free version of UltimateZip— http://www.ultimatezip.com/).

COURSE TOPICS *(You must be able to use and explain all these)***:**

- history
- JRE/JDK installation
- command line
  - javac
  - javadoc
  - java
  - jar
- *assertions*
- key terms
- Java Syntax
- Java console I/O
  - Scanner class
  - System.out
    - printf / print / println
- data types
  - primitive types (*value variables*)
  - casting
    - explicit
    - automatic
  - constants (static finals)
  - *enumeration*
  - intro to Abstract Data Types
  - using classes/objects (*reference variables*)
    - Strings
    - Arrays
    - Wrappers
- control structures
  - sequence
  - selection
    - if
    - if/else
    - switch
    - ?: (ternary if)
  - iteration / loops
    - while
    - do/while
    - for
    - for (each)
- methods
  - return types
  - parameters / arguments
    - primitive
    - objects
  - static methods
    - Math
- classes
  - properties
  - methods
    - constructors
    - accessors (get)
    - mutators (set)
    - overloading
  - Object class
    - toString()
    - equals()
  - packages
- algorithms
  - swap
  - sum / total & average
- Basic Exception Handling
  - try
  - catch
- Graphics
- Applets
- related topics

This class supports the College-wide standards and objectives. To that end, students make use of critical thinking, written and oral communication skills to accomplish the objectives indicated above.
If you require an accommodation for a disability, please contact Services for Students with Disabilities.
College Closure Information: You can sign up to receive email or text notifications of college closures or delayed openings due to weather or other emergencies http://www.shoreline.edu/safetyandsecurity/emergency-closure.aspx . If weather or illness keeps me from getting to campus (and the college is open), an announcement will be posted on Canvas and/or an email message will be sent to your SCC email account, at the earliest possible time. However, be sure to check the college's website to see if the college is closed and all classes are canceled.
Critical thinking:
Apply, analyze, synthesize, and evaluate information; demonstrate standards of good thinking while examining ideas presented through this course and solving problems related to the curriculum; identify

arguments, evaluate the subject matter, and form conclusions based on sound reasoning; and examine and evaluate their own thinking as well as the thinking of others.

Grading:

The grading will be on a strict percentage basis given the total number of points available for the assignment, quiz or test. Attendance starts at 5% and can only go down. See the Grade Table below for the grade point equivalents. No make-up tests or quizzes will be given unless prearranged. Late assignments will lose 25%. If your grade would have been 100% of the points available and it is one class late, your grade will now be 75% of the points earned. **No late work accepted after one class day late**.

Time: The average student with keyboarding skills (not hunt and peck typists) will find that they spend about 12 - 15 hours per week on their own at the computer keyboard. This is in addition to class time and study time at home. There are over 400 computers on the Edmonds CC campus. See www.edcc.edu/library and www.edcc.edu/acs/Facilities.php for computer locations.

Grade table: Percentage Earned to Grade Points

>= 94% --- 4.0	83% --- 3.0	73% --- 2.0	63% --- 1.0
93% --- 3.9	82% --- 2.9	72% --- 1.9	<=62% --- 0.0
92% --- 3.8	81% --- 2.8	71% --- 1.8	
91% --- 3.7	80% --- 2.7	70% --- 1.7	
90% --- 3.6	79% --- 2.6	69% --- 1.6	
89% --- 3.5	78% --- 2.5	68% --- 1.5	
88% --- 3.4	77% --- 2.4	67% --- 1.4	
87% --- 3.3	76% --- 2.3	66% --- 1.3	
86% --- 3.2	75% --- 2.2	65% --- 1.2	
85% --- 3.1	74% --- 2.1	64% --- 1.1	

Grade Weighting	**% of total**
Assignments (Programs)	40%
Mid term Exam - one 3x5" card of notes	20%
Final Exam - one 3x5" card of notes	20%
(Almost) Daily Quizzes - **no notes** (lowest score dropped)	10%
In class Participation/Exercises (lowest score dropped)	10%

NOTE: All your work, assignments, disks, and folders, must be labeled clearly with your full Name, course number (such as CS141), Section (such as SA), quarter (such as Fall 2014) and assignment name.

Assignment Submission:

You must submit all zipped electronic copies of work before class begins on the specified date. Make sure you provide all needed files and folders by clicking on the project link. You must ensure your zipped file contains all of the projects files and you have scanned it for viruses. You should test your zip file by unzipping it in another location (perhaps the temp folder) and checking that you can compile and run it. If possible, I will arrange for you to submit zipped copies of your work on Canvas.

You must submit any required physical copies of required work during or before the first 5 minutes at the START of the class time on the due date (unless specified otherwise). After that, the work would be late and lose points accordingly.

Paper copies of Programs must be turned in on time: (not emailed!) (continued below)

You must include your full name, course and section. Do NOT include any covers or cover sheet unless required by the assignment.

Print programs on trimmed paper and staple all pages in the upper left corner.

If you are required to submit work on a flash drive, you must label it with your name, course and section.

No work will be accepted after the last day of class. (Not at the final)

NOTE: I do not assign "V" grades (Instructor initiated withdrawal). If you decide to quit coming to class it is up to you to officially drop the class. If you don't you will be given the grade earned in accordance with the above schedule.
NOTE: I only assign "I" (Incomplete) grades under special circumstances (personal or family crisis). If you sign up for this class you are expected to attend class and complete all your work by the due dates. A grade of Incomplete must be preceded by a written and signed contract between you and the instructor detailing the work to be done and the dates by which it will be turned in.

Attendance:
Attendance is required. You are responsible for material covered during lecture and lab. Missing class or lab is not an adequate excuse for turning material in late, making up a quiz or test, or getting private tutoring from the instructor.
There is generally some lecture during lab.
Due to the concerns about the spread of the flu we will be taking extra precautions this quarter. If you have the symptoms of the flu you are asked to stay home. This is a college wide issue and practice. I will make every effort to stay well and be at school and will work with you should you become ill and stay home. Please take extra care to get enough sleep and observe safe health practices during the quarter.

Your responsibility to this class includes:
Class participation (asking questions, pointing out answers, working on assigned exercises, providing brief, interesting current events when appropriate)
Taking notes on lectures - these will be very useful during labs and for studying.
Helping peers learn
Not distracting others (extraneous talking & playing games / Internet surfing during class, cell phone, etc.)
Individual projects
Team projects
Completing work in a timely manner
Paying attention so things do not have to be repeated needlessly
Not to take up class time with personal needs (attendance signatures, etc.)
Cheating is defined as The Giving, Receiving, or Taking of answers (including code) on a quiz, test, or assignment.
Cheating will not be tolerated. If you cheat, your grade for that work will be adjusted to 0%. Students who are suspected of cheating will have a private talk with me and/or the division director if circumstances seem to warrant it. During or after this discussion we may take other or additional action.
The following list is a sample of items that are cheating:
Any assignment, quiz, or test which is copied in whole or in part from another person.
Giving/sharing/showing same as above to another person.
Plagiarism. You must be sure that you know what this means. See Merriam-Webster's definition .
Using current exams to study for late test taking.

CS141 Tentative schedule: **Canvas has current Deadlines** & updates to meet academic needs
Study material assigned before the date listed to prepare for daily quiz & exercises

Wed.	24-Sep	Introduction, finding course topics, computer basics, programming basics, GUI, Ch. 11.3 command line arguments. Project1
Mon.	29-Sep	Ch. 1 programs, computer, Java, environment, analysis, errors, problem solving, Appendix I coding (style) guide
Wed.	1-Oct	Ch. 2.1 objects/classes, 2.2 variables, 2.3 calling method, 2.4 constructors, 2.5 get & set
Mon.	6-Oct	Ch. 2.6 API documentation, Appendix F documentation, 2.7 test, 2.8 object references, 11.4 exceptions, Special Topic 11.5 assertions, 6.10 debugger. Program 1 DUE
Wed.	8-Oct	Ch. 3.1 instance variables, 3.2 API, 3.3 class implementation, 3.4 unit tests
Mon.	13-Oct	Ch. 3.5 problem solve Tracing objects, 3.6 local variables, 3.7 'this' Ch. 6.10 debugger
Wed.	15-Oct	Ch. 4.1 numbers, 4.2 arithmetic, 4.3 I/O
Mon.	20-Oct	Ch. 4.4 problem solve first, do it by hand, 4.5 strings. Program 2 DUE
Wed.	22-Oct	Ch. 5.1 if, 5.2 comparing, 5.3 multiple alternatives, 5.4 nesting, 5.5 flowcharts, 5.6 test cases, 5.7 Booleans, 5.8 input validation ("input is evil")
Mon.	27-Oct	Ch. 6.1 while, 6.2 hand trace, 6.3 for loop,
Wed.	29-Oct	6.4 do loop, 6.5 Storyboards, 6.7 common loops, 6.8 nested loops, 6.9 random simulation
Mon.	3-Nov	Review. Program 3 DUE
Wed.	5-Nov	EXAM 1: Ch. 1-6 and Appendix I
Mon.	10-Nov	Ch. 7.1 array, 7.2 enhanced for loop, 7.3 common array algorithms, 7.4 adapting algorithms, 7.5 problem solving by manipulating objects, 7.6 2-D arrays
Wed.	12-Nov	Ch. 7 continued
Mon.	17-Nov	Ch. 8.1 classes, 8.2 good methods, 8.3 patterns, 8.4 static variables & methods, 8.5 packages 8.6 unit test framework. Program 4 DUE
Wed.	19-Nov	Ch. 11.1 r/w text files, 11.2 text i/o, 11.4 exceptions, 11.5 input errors ("input is evil")
Mon.	24-Nov	Ch. 20.1 readers, writers & streams, 20.2 binary i/o, 20.3 random access, 20.4 object streams
Wed.	26-Nov	Ch. 2.9 graphical apps, 2.10 ellipses, etc. , 3.8 shape classes
Mon.	1-Dec	Ch. 19 gui 19.1 layout, 19.2 text input, 19.3 choices. Program 5 DUE
Wed.	3-Dec	Review, Ch. 19.5 swing documentation (time permitting)
Wed.	10-Dec	11:30-1:20 final EXAM: all material covered, focus on material since exam1