CS209 Programming in Java

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	email must have CS209 in the subject heading
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TEXT:	Introduction to Java Programming, Comprehensive Version (10th ed)
	ISBN-10: 0-13-376131-2 ISBN-13: 978-0-13-376131-3 by Y. Daniel Liang
SOFTWARE:	Netbeans IDE 8.0 Java EE Version JDK 1.8 is available on the computers in K236/K238.
	java JDK 1.8.0_11 and netbeans 8.0 can be found at
	http://www.oracle.com/technetwork/java/javase/downloads/index.html
	https://netbeans.org/downloads/
	Disk Storage Recommended: USB flash drive.

CS209 is a study of the Java programming language for students who already have programmed in another language. Major topics include object-oriented programming, class hierarchies and inheritance, encapsulation, syntax, data types/structures, control structures, graphical user interface components, exceptions, files and streams, applications and applets. Prerequisite: CS 121 or MT 191 or DA 140 or permission.(From College Catalog). CS209 is a 4 credit hour degree level course.

Upon completion of this course, the student will be able to:
Design, write, debug, and execute applets and programs in Java using one of the popular development environments. Design, write, debug, and execute applets and programs in Java using an object-oriented approach. Design, write, and debug applets in Java that run in a World Wide Web browser such as Netscape Navigator, Microsoft Explorer, or Mozilla. Use the existing standard Java class libraries and their Application Programming Interfaces (APIs) to develop applets and programs in Java. Design, write, and debug applets and programs in Java that include use of class data members and member methods. Use the standard Java data types (e.g., integers, double, arrays) to write applets and programs in Java. Use the standard Java control structures to write applets and programs in Java. Design, write, and debug applets and programs in Java that use a multi-level class hierarchy and inheritance. Design, write, and debug applets and programs in Java that use method and variable overriding and overloading. Design, write, and debug applets/programs in Java that include graphics components. Design, write, and debug applets/programs in Java that include graphical user interfaces (GUIs) and components. Design, write, and debug applets/programs in Java that use files and streams. Design, write, and debug Java programs that consist of applications in other disciplines such as the sciences, engineering, and business. Write documentation that is included in the internal program modules. Design, write, and debug Java programs that satisfy a set of written specifications provided to the student.

Program Competencies
Identify all the steps of the software system life cycle and perform problem analysis, the top-down step-wise refinement design process, coding, and testing. Write, execute, and debug programs in high-level languages, an assembly language, and/or hybrid programs. Explain the concept of an abstract data type (structure) and design such data types for use in programs.
ECC Learning Outcomes:
Quantitative Reasoning (LV3). Technological Competence
Library Resources:
The textbook is on reserve in the library. Learning resources are room K236/K238, Computer Skills Center,one lab per week for class and open hours for work on projects and labs.
GRADING

This course will have three (3) one hour exams which will constitute 30 % of your grade. Weekly labs will comprise 70% of your final grade. *In order to pass, the student must have a passing average on all grading components*
Projects and Labs:
All the assigned projects/labs must be completed in order to receive a grade in the course. Each project/lab must be working correctly, error-free, and well documented when turned in for credit. Each project/lab must be turned in by the designated due date for full credit. Late projects/labs will lose 10 % per weekday. Each program will be judged on the basis of working correctly user and programmer manuals program structure, understandability, and form
Grades will be determined as follows:

A (above 90 %) B (80 % -89 %) C (70 % - 79 %) D (60 % - 69 %) F (below 60 %)

Honesty:
Be careful with your projects and assignments; do not leave your printouts, disks, etc., lying around. Each person is expected to do their own work. Each person is to design, write, code, test and debug their own programs, individually. The usual college statement applies to honest work.

There are NO MAKE-UP EXAMS, QUIZZES OR ASSIGNMENTS
'Regular attendance is expected of the student in every course for which he or she is registered' (page2, ECC catalog) Students are responsible for any work covered while they are absent. Excessive absence will affect your grade. Attendance is expected. Class participation and proper student conduct are considered in the final grade.

Students with disabilities:
Erie Community College recognizes the right of qualified individuals with disabilities to receive appropriate course accommodations and academic adjustments. These arrangements are made on a case-by-case basis. If there is a physical or mental impairment (including learning disability or Attention Deficit Disorder), which will impact the ability to participate in this class then contact the Disabled Student Services office listed below as soon as possible. A counselor will provide information to the instructor which will allow appropriate academic adjustments to be made for the student.

City Campus: Counseling: 45 Oak: Room 102L 851-1189
North Campus: S Bldg: Spring Center: Room 212A 851-1495
South Campus: Bldg. 3: Room 3120 851-1933

Topical Outline

I. Basics of Java

A. Introduction
B. The Java programming language and the Java class libraries
C. Object-oriented and structured programming
D. Java development process
E. Java development tools
F. Examples

II. Introduction to Java Applications, Applets, Data Types

A. The basics of applications
B. Input and output statements
C. Primitive data types
D. Arithmetic
E. The basics of Java applets
F. HTML file to load applet into Web browser
G. Variables and references
H. Examples

III. Object-Oriented Programming

A. Class concept and abstract data types
B. Class hierarchies; the Java API
C. Class members
D. Creating and using constructors
E. Creating and using instances of classes
F. Creating and using methods
G. Parameters
H. Math class methods
I. Final instance variables
J. Data abstraction and information hiding
K. Examples

IV. More on Classes and Methods

A. Algorithms
B. Modules, methods, and method definitions
C. Duration rules
D. Scope rules
E. Method overloading
F. Static class members
G. Controlling access to members
H. Recursion (Optional)
I. Examples

V. Control Structures I- Selection

A. Control structures
B. The if and if/else selection structures
C. The switch multiple-selection structure
D. The break statement
E. Logical operators
F. Formulating algorithms
G. Assignment operators
H. Increment and decrement operators
I. Operator precedence
J. Examples

VI. Control Structures II - Loops

A. Counter-controlled repetition
B. The while repetition structure
C. The for repetition structure
D. The do/while repetition structure

E. The break and continue statements
F. Structured programming
G. Examples

VII. Arrays
A. Declaration and allocation of arrays
B. Creating and using arrays
C. Passing arrays as parameters
D. Sorting and searching arrays
E. Multi-dimensional arrays
F. Examples

VIII. Advanced Object-Oriented Programming
A. Fundamentals of inheritance
B. Superclasses and subclasses
C. Access / visibility modifiers
D. Superclass objects and subclass objects
E. Constructors and finalizers
F. Inheritance and composition
G. Polymorphism and dynamic binding
H. Types of classes
I. Examples

IX. Graphics
A. Graphics contexts and objects
B. Color class and usage
C. Font class and usage
D. Drawing strings, characters, bytes
E. Drawing lines, rectangles, ovals, arcs, polygons, polylines
F. Java2D and Graphics2D
G. Examples

X. Graphical User Interfaces and Components
A. Graphical user interface (GUI) fundamentals
B. Event-driven programs; event handling
C. Swing classes
D. Windows (JFrame class)
E. Labels (JLabel class)
F. Buttons (JButton class)
G. Textfields (JTextField class)
H. Single and multiple selection lists (JComboBox and JList classes)
I. Check boxes and radio buttons (JCheckBox and JRadioButton classes)
J. Mouse event handling
K. Keyboard event handling
L. Layout managers (FlowLayout, BorderLayout)
M. Panels (JPanel class)
N. Examples

XI. Advanced Graphical User Interfaces and Components
A. Text areas (JTextArea class)
B. Sliders (JSlider class) (Optional)
C. Menus (JMenu, JMenuBar, JMenuItem classes)
D. Advanced layout managers (GridLayout, BoxLayout, CardLayout)
E. Dialogs (JDialog class) (Optional)
F. Pluggable look-and-feel (Optional)
G. GridBagLayout (Optional)
H. Examples

XII. Exception Handling
A. Exception handling fundamentals
B. Errors and Exceptions

C. Try-catch-finally structure
D. Catching exceptions
E. Throwing exceptions
F. Examples

XIII. Files and Streams
A. File and stream fundamentals
B. Sequential access files
C. Random access files
D. Examples

XIV. Evaluation

... if you were unaware

Classroom "etiquette" expectations:

Attend classes and pay attention. Do not ask the instructor in class to go over material you missed by skipping a class
If you must enter a class late, do so quietly and do not disrupt the class by walking between the class and the instructor.
Do not talk with other classmates while the instructor or another student is speaking. If you have a question or a comment, please raise your hand, rather than starting a conversation about it with your neighbor.
Show respect and concern for others by not monopolizing class discussion. Allow others time to give their input and ask questions. Do not stray from the topic of class discussion.
Before entering class turn off all electronics: mobile devices, pagers, and beeper watches. These devices are disruptive to the class and their use during a lecture is rude to the class and instructor.
Focus on class material during class time. Sleeping, talking to others, doing work for another class, reading the newspaper, checking email, and exploring the internet are unacceptable and can be disruptive.
No mobile devices should be in your hands during class. This means no fiddling with your phones, reading/sending text messages, etc.
Penalty for cell phone abuse during class: 5 points/incident subtracted from your final grade A student who really abuses this policy will be given a final grade of F
Do not ask if your lowest grade is dropped - it's not
Do not ask " What are my grades ? " You should save all tests and graded assignments and know how you are doing in the course.
Do not pack book bags or backpacks to leave until the instructor has dismissed class.
It is not required by law that you be in this class. You are free not to attend

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