ILLINOIS VALLEY COMMUNITY COLLEGE

COURSE OUTLINE

DIVISION: Workforce Development

COURSE: CSI 1012; Object Oriented Programming

Date: Spring 2014

Credit Hours: 4

Prerequisite(s):   CSI 1011 Intro to Programming with a grade of C or better

Delivery Method: ☒ **Lecture**   **3 Contact Hours** (1 contact = 1 credit hour)

☐ **Seminar**   **0 Contact Hours** (1 contact = 1 credit hour)

☒ **Lab**   **2 Contact Hours** (2 contact = 1 credit hour)

☐ **Clinical**   **0 Contact Hours** (3 contact = 1 credit hour)

☐ **Online**

☐ **Blended**

Offered: ☒ **Fall**   ☐ **Spring**   ☐ **Summer**

IAI Equivalent –*Only for Transfer Courses*-go to *http://www.itransfer.org*: CS 912

CATALOG DESCRIPTION:
Introduces the concepts of object oriented programming to students with a background in the procedural paradiagm. Taught using the Java programming language. The course begins with a review of control structures and datatypes with emphasis on structured data types and array processing. It then moves to introduce the object-oriented programming paradigm, focusing on the definition and use of classes along with the fundamentals of object-oriented design. Additional topics may include overview of simple analysis of algorithms, basic searching and sorting techniques and an introduction to software engineering issues. Lecture, 3 hours; lab, 2 hours. Prerequisite: CSI 1011 with a grade of C or better.

GENERAL EDUCATION GOALS ADDRESSED

[See the last page of this form for more information.]

Upon completion of the course, the student will be able:

[Choose those goals that apply to this course.]

☒ To apply analytical and problem solving skills to personal, social and
    professional issues and situations.

☐ To communicate orally and in writing, socially and interpersonally.

☐ To develop an awareness of the contributions made to civilization by
    the diverse cultures of the world.

☒ To understand and use contemporary technology effectively and to
    understand its impact on the individual and society.

☐ To work and study effectively both individually and in collaboration with
    others.

☐ To understand what it means to act ethically and responsibly as an
    individual in one's career and as a member of society.

☐ To develop and maintain a healthy lifestyle physically, mentally, and
    spiritually.

☐ To appreciate the ongoing values of learning, self-improvement, and
    career planning.

EXPECTED LEARNING OUTCOMES AND RELATED COMPETENCIES:

[Outcomes related to course specific goals.]

Upon completion of the course, the student will be able to:

1. Understand and explain the benefits and costs of objected oriented programming.
2. Be able to create and understand Java programs using methods.
3. Identify situations where using methods is appropriate.
4. Be able to create and understand Java programs using inheritance.
5. Identify situations where using inheritance is appropriate.
6. Be able to create and understand Java programs using polymorphism.
7. Identify situations where using polymorphism is appropriate.
8. Be able to create and understand Java programs using exception handling.
9. Identify situations where using exception handling is appropriate.

Outcome 1: Students will use methods
    Competency 1.1 - Students will create programs with methods
    Competency 1.2 - Students will code user defined methods
    Competency 1.3 - Students will pass parameters to methods and use values
        returned by methods
    Competency 1.4 - Students will understand function side effects.
Outcome 2: Students shall use strings
    Competency 2.1 - Students will understand the value of using strings
    Competency 2.2 - Students will create programs using strings
    Competency 2.3 - Students will understand and use facilities provided by strings
    Competency 2.4 - Students will understand side effects of using strings
Outcome 3: Students shall use arrays
    Competency 3.1 Students shall understand the benefits of single dimensional arrays
    Competency 3.2 Students shall be able to create programs using single dimensional
        arrays.
    Competency 3.3 Students shall understand the benefits of multi dimensional arrays

Outcome 4: Students shall use files and streams
>   Competency 4.1 Students shall create programs with input files.
>   Competency 4.2 Students shall create programs with output files.
>   Competency 4.3 Students shall create programs with input streams.
>   Competency 4.4 Students shall create programs with output streams.

Outcome 4: Students shall understand the concept of object oriented based programming
>   Competency 4.1 Students shall understand and be able to explain what object oriented programming is.
>   Competency 4.2 Students shall understand and be able to explain the value of object oriented programming.
>   Competency 4.3 Students shall understand and be able to explain the costs and drawbacks of object oriented programming.

Outcome 5: Students shall understand the object oriented concept of inheritance.
>   Competency 5.1 Students shall understand the benefits of using inheritance.
>   Competency 5.2 Students shall be able to recognize situations where inheritance is useful.
>   Competency 5.3 Students shall be able to create programs using inheritance.

Outcome 6: Students shall understand the object oriented concept of inheritance.
>   Competency 6.1 Students shall understand the benefits of using polymorphism.
>   Competency 6.2 Students shall be able to recognize situations where polymorphism is useful.
>   Competency 6.3 Students shall be able to create programs using polymorphism.

Outcome 7: Students shall understand exception handling
>   Competency 7.1 Students shall be able to identify exceptions.
>   Competency 7.2 Students shall be able to write programs that handle exceptions.

Outcome 8: Students shall understand the basic concepts of data structures
>   Competency 8.1 Students shall understand what a data structure is.
>   Competency 8.2 Students shall have a cursory understanding of the simple data structures lists, stacks, and queues.
>   Competency 8.3 Students will understand the merits and disadvantages of lists, stacks, and queues.

COURSE TOPICS AND CONTENT REQUIREMENTS:
Methods
Arrays
Strings and Characters
Files and Streams
Object-Based Programming
Inheritance
Polymorphism
Exception Handling
Data Structures

INSTRUCTIONAL METHODS:
Lecture
Lab - hands-on training
Testing
Programming assignments
Teacher demonstration

INSTRUCTIONAL MATERIALS:
Java Programming: From Problem Analysis To Program Design 5e D.S. Malik
Powerpoint Slides
Windows XP or Windows Vista PC with Internet Explorer 6.0 (or later) and Java
Runtime Environment installed.
Java JDK 6.0 (or later) installed. Cost of JDK is free per License agreement at
java.sun.com
NetBeans IDE version 5.5 (or later). Cost is free per License agreement at java.sun.com
Text Editor (TBD). Cost TBD

STUDENT REQUIREMENTS AND METHODS OF EVALUATION:
Students are expected to read the textbook prior to the lecture. Students are evaluated on
a near weekly basis with at least one assignment per topic. A midterm and final exam shall
also be used and shall be a significant part of the students' grade.

OTHER REFERENCES

Course Competency/Assessment Methods Matrix

CSI 1012; Object Oriented Programming	Assessment Options

For each competency/outcome place an "X" below the method of assessment to be used.	Assessment of Student Learning	Article Review	Case Studies	Group Projects	Lab Work	Oral Presentations	Pre-Post Tests	Quizzes	Written Exams	Artifact Self Reflection of Growth	Capstone Projects	Comprehensive Written Exit Exam	Course Embedded Questions	Multi-Media Projects	Observation	Writing Samples	Portfolio Evaluation	Real World Projects	Reflective Journals	Applied Application (skills) Test	Oral Exit Interviews	Accreditation Reviews/Reports	Advisory Council Feedback	Employer Surveys	Graduate Surveys	Internship/Practicum /Site Supervisor Evaluation	Licensing Exam	In Class Feedback	Simulation	Interview	Written Report	Assignment
Assessment Measures – Are direct or indirect as indicated. List competencies/outcomes below.	Direct/ Indirect	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	I	I	I	I	D	D						
Outcome 1: Students will use methods					X				X																							X
Outcome 2: Students shall use strings					X				X																							X
Outcome 3: Students shall use arrays					X				X																							X
Outcome 4: Students shall use files and streams					X				X																							X
Outcome 5: Students shall understand the concept of object oriented based programming					X				X																							X
Outcome 6: Students shall understand the object oriented concept of inheritance.					X				X																							X
Outcome 7: Students shall understand the object oriented concept of inheritance.					X				X																							X