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 paradigm. 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 object 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

<table>
<thead>
<tr>
<th>CSI 1012: Object Oriented Programming</th>
<th>Assessment Options</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assessment of Student Learning</strong></td>
<td>Assessment Measures – Are direct or indirect as indicated. List competencies/outcomes below.</td>
</tr>
<tr>
<td>D</td>
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</tbody>
</table>

For each competency/outcome place an “X” below the method of assessment to be used.

<table>
<thead>
<tr>
<th>Outcome 1: Students will use methods</th>
<th>X</th>
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