



ILLINOIS VALLEY COMMUNITY COLLEGE

COURSE OUTLINE

DIVISION: Workforce Development

COURSE: CSI 1011 Computer Science I

Date: Fall 2019

Credit Hours: 4

Prerequisite(s): MTH 0920 or MTH 1206

Delivery Method:

<input checked="" type="checkbox"/> Lecture	3 Contact Hours (1 contact = 1 credit hour)
<input type="checkbox"/> Seminar	0 Contact Hours (1 contact = 1 credit hour)
<input checked="" type="checkbox"/> Lab	2 Contact Hours (2-3 contact = 1 credit hour)
<input type="checkbox"/> Clinical	0 Contact Hours (3 contact = 1 credit hour)
<input type="checkbox"/> Online	
<input checked="" type="checkbox"/> Blended	

Offered: Fall Spring Summer

IAI Equivalent –**Only for Transfer Courses**-go to <http://www.itransfer.org>: CS 911

CATALOG DESCRIPTION:

This is the first course in a sequence of courses for computer science, mathematics and engineering majors. This course introduces procedural programming and advances to object oriented programming. Topics include: algorithm development, input/output, selection, repetition, using objects, creating objects, arrays, records and files. Students learn good programming practices in programming, documentation, and testing. This course is equivalent to the College Board Computer Science A AP exam. This course is also equivalent to IAI CS 911. Lecture: 3 hours; Lab: 2 hours.

GENERAL EDUCATION GOALS ADDRESSED

[See last page for Course Competency/Assessment Methods Matrix.]

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

[Choose up to three goals that will be formally assessed in this course.]

- To apply analytical and problem solving skills to personal, social, and professional issues and situations.
- To communicate successfully, both orally and in writing, to a variety of audiences.
- To construct a critical awareness of and appreciation for diversity.
- To understand and use technology effectively and to understand its impact on the individual and society.
- To develop interpersonal capacity.
- To recognize what it means to act ethically and responsibly as an individual and as a member of society.
- To recognize what it means to develop and maintain a healthy lifestyle in terms of mind, body, and spirit.
- To connect learning to life.

EXPECTED LEARNING OUTCOMES AND RELATED COMPETENCIES:

[Outcomes related to course specific goals. See last page for more information.]

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

1. Design, code, debug, and implement programs to solve problems
2. Utilize primitive and reference variables; utilize predefined objects and methods
3. Input and output from/to the console and from/to files
4. Write selection and repetition control structures
5. Write simple user-defined methods and classes, including constructors, methods with and without parameters, void-returning and value-returning methods.
6. Utilize an array basic data structure including sorting and searching arrays
7. Catch simple exceptions

Outcome 1 – Students will be able to design, code, debug, and implement programs to solve problems.

- 1.a Students will use structured programming logic to develop algorithms and flowcharts.
- 1.b Students will use comments to add clarity to programs
- 1.c Students will use test data to verify and validate output
- 1.d Students will start to learn debugging by understanding error messages.
- 1.e Students will learn to enter code using an IDE and utilize the IDE's debugger

Outcome 2 – Students will be able to utilize primitive and reference variables; utilize predefined objects and methods.

- 2.a Students will learn about data types, objects and reference variables
- 2.b Students will become familiar with some commonly used objects and methods and how to read online syntax documentation
- 2.c Students will learn basic arithmetic with integers and decimal data. They will learn to convert between primitive types (casting) and convert between numeric data and String data using wrapper classes.

Outcome 3 – Students will be able to input and output from/to the console and from/to files

- 3.a Students will use classes and methods to input from a keyboard and from a file
- 3.b Students will use classes and methods to output to the console
- 3.c Students will use classes and methods to output to a windowed environment.
- 3.d Students will use classes and methods to output to a file.

Outcome 4 – Students will be able to write selection and repetition control structures

- 4.a Students will code simple, nested, compound if statements
- 4.b Students will code switch (case) structures
- 4.c Students will code pre-test and post-test repetition structures
- 4.d Students will code nested loops
- 4.e Students will code counter-controlled, sentinel-controlled, boolean controlled, and EOF-controlled repetition structures

Outcome 5 – Students will be able to write simple user-defined methods and classes, including constructors, methods with and without parameters, void-returning and value returning methods

- 5.a Students will understand how methods are used in programming
- 5.b Students will understand actual and formal parameters
- 5.c Students will write methods inside and outside the class that contains the main method
- 5.d Students will create object classes with constructors, accessors, and mutators
- 5.e Students will be introduced to abstract data types

Outcome 6 – Students will be able to utilize an array basic data structure including sorting and searching arrays

- 6.a Students will learn how to declare and manipulate data in arrays
- 6.b Students will learn how to pass an array as a parameter to a method
- 6.c Students will code a linear and binary search on an array
- 6.d Students will code one type of sort on an array
- 6.e Students will be introduced to multi-dimensional arrays

Outcome 7 – Students will be able to catch simple exceptions

- 7.a Students will learn what an exception is and how to handle exceptions
- 7.b Students will become acquainted with the hierarchy of exception classes

MAPPING LEARNING OUTCOMES TO GENERAL EDUCATION GOALS

[For each of the goals selected above, indicate which outcomes align with the goal.]

Goals	Outcomes
First Goal	
To apply analytical and problem solving skills to personal, social, and professional issues and situations.	Outcome 1-7 - all
Second Goal	
To understand and use technology effectively and to understand its impact on the individual and society.	Outcome 1-7 - all

COURSE TOPICS AND CONTENT REQUIREMENTS:

Overview of what programming is
Basics of values, variables and operations
Assignment and input/output
Selection
Repetition
Methods – using and creating
Classes – using and creating
String manipulation
Arrays

INSTRUCTIONAL METHODS:

- Lecture
- Lab
- Programming Assignments
- Group coding project
- Tests

INSTRUCTIONAL MATERIALS:

Java Programming: From Problem Analysis To Program Design 5e, D.S. Malik
JGrasp and/or NetBeans IDE
Java SDK – latest version
Computers for the students to work on in lab time

STUDENT REQUIREMENTS AND METHODS OF EVALUATION:

Students are expected to:

1. Read assigned material from book and select Internet sites
2. Watch videos when assigned on key topics that show coding techniques
3. Code, compile, test, and document programming assignments individually
4. Code, compile, test, and document at least one group programming assignment
5. Ask questions in class and lab to further his/her understanding of the topic

Grading Scale:

A= 90-100

B= 80-89

C= 70-79

D= 60-69

F= 0-59

There will be two exams, midterm and final. Exams are worth 50% of overall weight. There will be 8-10 programming assignments varying in point value. Classroom activities may be used to increase participation and understanding. Classroom activities and programming assignments are worth 50% of the overall weight.

OTHER REFERENCES

Fundamentals of Java AP Computer Science Essentials for the A and AB Exams 3e, Lambert/Osborne

Big Java Early Objects 6e, Horstmann

Course Competency/Assessment Methods Matrix

(Dept/# Course Name)	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
	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						
Assessment Measures – Are direct or indirect as indicated. List competencies/outcomes below.																																
Students will be able to design, code, debug, and implement programs to solve problems.				X			X	X									X										X					X
Students will be able to utilize primitive and reference variables; utilize predefined objects and methods.			X	X			X	X									X										X					X
Students will be able to input and output from/to the console and from/to files.				X			X	X									X										X					X
Students will be able to write selection and repetition control structures.			X	X			X	X									X									X						X

