

## School of Computing and Information Sciences

**Course Title:** Computer Programming I

**Date:** 2/12/2018

**Course Number:** COP 2210

**Number of Credits:** 4

<b>Subject Area:</b> Programming	<b>Subject Area Coordinator:</b> Tim Downey <b>email:</b> downeyt@cs.fiu.edu
<b>Catalog Description:</b> A first course in computer science that uses a structured programming language to study programming and problem solving on the computer. Includes the design, construction and analysis of programs. Student participation in a closed instructional lab is required. This course will have additional fees.	
<b>Textbook:</b> Big Java by Cay Horstmann	
<b>References:</b>	
<b>Prerequisites Courses:</b> None	
<b>Co-requisites Courses:</b> Includes a closed lab component	

**Type:** Required Common Prerequisite

**Prerequisites Topics:** None

**Course Outcomes:**

- O1. Be familiar with the concepts of Objects & Classes**
- O2. Master the fundamental Java data types**
- O3. Master the Java selection and iteration constructs**
- O4. Be exposed to arrays**
- O5. Master using String, ArrayList and Wrapper classes**
- O6. Master analyzing problems and writing Java program solutions to those problems using the above features**
- O7. Be exposed to software testing and interactive debugging**
- O8. Master complex Boolean expressions in selection and iteration constructs**
- O9. Master good programming practices**
- O10. Master methods, method parameters, and parameter passing**

*(SAC will provide a list of best programming practices for instructors as a reference)*

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**Relationship between Course Outcomes and Program Outcomes**

<b>BS in CS: Program Outcomes</b>	<b>Course Outcomes</b>
a) Demonstrate proficiency in the foundation areas of Computer Science including mathematics, discrete structures, logic and the theory of algorithms	
b) Demonstrate proficiency in various areas of Computer Science including data structures and algorithms, concepts of programming languages and computer systems.	1, 2, 3, 4, 5
c) Demonstrate proficiency in problem solving and application of software engineering techniques	1, 2, 3, 4, 5
d) Demonstrate mastery of at least one modern programming language and proficiency in at least one other.	1, 2, 3, 4, 5
e) Demonstrate understanding of the social and ethical concerns of the practicing computer scientist.	
f) Demonstrate the ability to work cooperatively in teams.	
g) Demonstrate effective communication skills.	

**Assessment Plan for the Course & how Data in the Course are used to assess Program Outcomes**

Student and Instructor Course Outcome Surveys are administered at the conclusion of each offering, and are evaluated as described in the School's Assessment Plan:  
<http://www.cis.fiu.edu/programs/undergrad/cs/assessment/>

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**Outline**

<b>Topic</b>	<b>Number of Lecture Hours</b>	<b>Outcome</b>
<ul style="list-style-type: none"> <li>• <b>Objects &amp; Classes</b> <ul style="list-style-type: none"> <li>○ Class variables</li> <li>○ Defining a class</li> </ul> </li> </ul>	<b>5</b>	<b>O1, O5</b>
<ul style="list-style-type: none"> <li>• <b>I/O with JOptionPane</b></li> </ul>	<b>3</b>	<b>O1, O5</b>
<ul style="list-style-type: none"> <li>• <b>Fundamental Java data types</b> <ul style="list-style-type: none"> <li>○ Primitive types</li> <li>○ Strings</li> <li>○ Wrapper classes</li> </ul> </li> </ul>	<b>5</b>	<b>O2, O5</b>
<ul style="list-style-type: none"> <li>• <b>Control structures</b> <ul style="list-style-type: none"> <li>○ Selection</li> <li>○ Iteration</li> </ul> </li> </ul>	<b>8</b>	<b>O3, O5</b>
<ul style="list-style-type: none"> <li>• <b>Methods</b> <ul style="list-style-type: none"> <li>○ Accessors &amp; Mutators</li> <li>○ Method parameters</li> </ul> </li> </ul>	<b>8</b>	<b>O1, O5</b>
<ul style="list-style-type: none"> <li>• <b>ArrayLists</b></li> </ul>	<b>8</b>	<b>O4, O5</b>

**Course Outcomes Emphasized in Laboratory Projects / Assignments**

<b>Outcome</b>	<b>Number of Weeks</b>
	<b>At least 7 assignments of 1.5 week duration are given In addition, students complete 10 1-hour in-lab exercises</b>
<b>O1</b>	Assignments 1 & 2. All other assignments incidentally.
<b>O2</b>	Assignment 3.
<b>O3</b>	Assignments 5 & 6. Assignment 7 incidentally.
<b>O4</b>	Assignment 4. Assignments 5, 6 & 7 incidentally.
<b>O5</b>	Assignments 1 through 7

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**Oral and Written Communication:  
None**

**Social and Ethical Implications of Computing Topics:  
None**

**Approximate number of credit hours devoted to fundamental CS topics**

<b>Topic</b>	<b>Core Hours</b>	<b>Advanced Hours</b>
<b>Algorithms:</b>	<b>1.0</b>	
<b>Software Design:</b>	<b>1.0</b>	
<b>Computer Organization and Architecture:</b>	<b>0</b>	
<b>Data Structures:</b>	<b>0</b>	
<b>Concepts of Programming Languages:</b>	<b>1.0</b>	

**Theoretical Contents:  
None**

**Problem Analysis Experiences:  
None**

**Solution Design Experiences**

7-8 Programming Assignments
10 1-hour Lab Exercises

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**The Coverage of Knowledge Units within Computer Science Body of Knowledge<sup>1</sup>**

<b>Knowledge Unit</b>	<b>Topic</b>	<b>Lecture Hours</b>
<b>DS 2</b>	<b>Control structures (and/or, etc)</b>	<b>3</b>
<b>PF 1</b>	<b>Control structures</b>	<b>8</b>
<b>PF 3</b>	<b>ArrayLists</b>	<b>8</b>
<b>PF 5</b>	<b>I/O with JOptionPane</b>	<b>3</b>
<b>PL 4</b>	<b>Primitive and class types</b>	<b>2</b>
<b>PL 6</b>	<b>Objects &amp; Classes</b>	<b>5</b>
<b>SE 2</b>	<b>Using APIs</b>	<b>1</b>

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<sup>1</sup>See <http://www.computer.org/education/cc2001/final/chapter05.htm> for a description of Computer Science Knowledge units.