CSC 111 Introduction to Computer Science  
Syllabus  
Fall 2016  
Professor Burg

Office: Manchester 237  
Phone: 758-4465  
Email: burg@wfu.edu

Burg’s Office Hours: Monday and Friday, 11-12 PM  
Tuesday, 1 – 2 PM

TAs Office Hours:  
Maddie Izard izarmj14@wfu.edu  
Mon. 2 – 3 PM, Tues. 4 – 6 PM, Thurs. 4 – 6 PM
Arnav Bhandari bhana13@wfu.edu  
Tues., 5 – 6 PM, Friday, 3:30 – 5:30

Look for Maddie and Arnav in either MA 229 or MA 246.

CS Center MA 229 Hours:  
Sunday – Thursday, 6 – 8 PM (Arnav will be there Tues. and Wed. 6 – 8 PM)
See http://college.wfu.edu/cs/cs-center

Textbook: The textbook for the course is online, Programming in Java. See https://zybooks.zyante.com.

Course website: The course has a website on Sakai where handouts and other documents will be stored. The site is on Sakai under the course name and section.

Course Description from Wake Forest Bulletin, 2015-2016:  
111. Introduction to Computer Science. (4h) Lecture and laboratory. Introduction to the basic concepts of computer programming and algorithmic problem solving for students with little or no programming experience. Recommended as the first course for students considering a major or minor in computer science; also appropriate for students who want computing experience applicable to other disciplines. Lab – 2 hours (D)

Course Learning Objectives:  
In this course, students will learn the fundamentals of computational problem-solving. They will learn how to write logical sequences of statements that constitute an algorithm. They will develop algorithms and implement them in the programming language Java. As they write programs, students will learn how to use variables, constants, assignment statements, conditions, loops, input and output statements, arrays, functions, objects, classes, and inheritance. They will learn to write programs that use both textual and graphical user interfaces. Students will also gain experience with an integrated development environment (an IDE) – the programming environment that provides them with an editor, compiler, run-time environment, debugger, and plug-ins. They will learn how to write, compile, and debug programs in the given IDE, IntelliJ. By the end of the semester, students will be able to develop and implement algorithms to solve simple to moderately difficult problems.

Computer and File Maintenance  
During the course, students need continuous use of a laptop computer which has the IntelliJ IDE and JDK installed on it. The software is free, and installation instructions will be given in the first week of class. It is each student's responsibility to back up program files. Students will be shown how to back up their programs on Google Drive, where space is provided for them. It is the student's responsibility to ensure that program files are saved on Google Drive. In the event that a student's computer no longer functions, the student will be given
24/7 access to the Digital Media Lab, MA23, where desktop computers with IntelliJ and the SDK will be available. The student’s programs can be accessed from Google Drive, and the student can complete his or her programming assignments in the Digital Media Lab. **Computer failure or failure to backup program files will not be considered a valid reason for submitting assignments late.**

**Basis for Grade:**
Class attendance, participation, and assigned exercises in the zybook 10%
Tests and Quizzes 45%
Programs 45%

**Grading Scale:**
91-100  A
90  A-
89  B+
81-88  B
80  B-
79  C+
71-78  C
70  C-
69  D+
61-68  D
60  D-
below 60  F
Course Topics:

Problem Solving
The concept of an algorithm
Algorithmic problem-solving and problem-solving strategies
Structured decomposition and top-down design
Debugging strategies
Introduction to unit testing

Fundamental Constructs
Basic syntax and semantics of a higher-level language, Java
Variables, types, expressions, and assignment statements
Simple input and output
Conditional and iterative control structures
Recursion
Functions and parameter passing
Scope of identifiers
Call by value vs. call by reference

Data Representation, Data Types, and Data Structures
Binary and hexadecimal base systems
Primitive types such as character, integer, and floating point numbers
Arrays (1D and 2D) and array lists
Strings and string methods

References

Event Driven Programming
Introduction to event-driven programming
Call backs and action listeners

Object-Oriented Programming
Introduction to object-oriented design
Classes and objects and an introduction to inheritance
Encapsulation, data protection, and information-hiding
Separation of interface and implementation

Other Topics
The compile/link/run process
Types of errors:
  compiler vs. linker
  syntax vs logical vs run-time
Introduction to exception handling
Introduction to GUI-building
Introduction to memory management (e.g., garbage collection, run-time storage management)
Virtual machine and bytecode interpretation

Tools and Skills:
How to use an IDE effectively, including the debugger
How to use libraries and APIs, including their documentation
File structure fundamentals (directories and subdirectories)
Honor System
Wake Forest is an academic community that subscribes to an honor system. By accepting membership in this community, each student assumes the obligation to be trustworthy in all pursuits. Violations may be referred to the Judicial Council for investigation and determination of appropriate sanctions.

Special Needs
If you have a disability that may require an accommodation for taking this course, then please contact the Learning Assistance Center at (758-5929) within the first two weeks of the semester.
Plan in Event of Extended Campus Closing

Please note the following plan to be followed in the event that the Wake Forest campus is closed for an extended period of time and we are unable to have our regularly-scheduled class meetings.

In normal circumstances, please contact me through my campus email address or campus telephone number.  
campus email: burg@wfu.edu  
campus telephone: 758-4465

In emergency situations or situations where the campus is closed, you may also use the following contacts:  
email: burgjj@gmail.com  
cell phone number: (336) 407-3743

Your course information, including a schedule of assignments, will be posted on Sakai.

If we are able to meet before the campus is closed, I'll give you an updated schedule and instructions at that time.

After leaving campus, you should consult the schedule website regularly for updates to the schedule.

Be sure to take your book, computer, and course notes home with you in the event that the campus is closed. We’ll continue with tests and programming assignments, communicating through the internet, email, and/or hard mail.

Assignments will be posted on Sakai as usual, and you can submit your assignments on Sakai.

If the internet is down, I will mail your assignments to you in hard copy, and, by return address, you should mail back a flash memory drive containing the source code for the implemented program. I’ll return the flash drive to you later.
<table>
<thead>
<tr>
<th>Day</th>
<th>Assignment</th>
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<tbody>
<tr>
<td>Wed., Aug. 31</td>
<td>Chapter 1 – Introduction</td>
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<tr>
<td>Fri., Sept. 2</td>
<td>Chapter 2 – Variables and Assignments, 2.1 – 2.9</td>
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<tr>
<td>Mon., Sept. 5</td>
<td>Chapter 2 – Characters, strings, random numbers, debugging, 2.10 – 2.19</td>
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<td>Wed., Sept. 7</td>
<td>Chapter 3 – Branches, 3.1 - 3.4</td>
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<td>Fri., Sept. 9</td>
<td>Chapter 3 – 3.5 - 3.9</td>
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<tr>
<td>Mon., Sept. 12</td>
<td>Chapter 3 – 3.10 - 3.14 Program 1 assigned</td>
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<tr>
<td>Wed., Sept. 14</td>
<td>Chapter 4 – Loops, 4.1 - 4.4</td>
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<td>Fri., Sept. 16</td>
<td>Chapter 4 – 4.5 - 4.8</td>
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<td>Mon., Sept. 19</td>
<td>Chapter 4 – 4.9 – 4.11</td>
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<tr>
<td>Wed., Sept. 21</td>
<td>Review for test and talk about Program 1</td>
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<tr>
<td>Fri., Sept. 23</td>
<td>Test 1</td>
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<tr>
<td>Mon., Sept. 26</td>
<td>Chapter 5 – Arrays, 5.1 - 5.5 Program 1 due at midnight</td>
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<td>Wed., Sept. 28</td>
<td>Chapter 5 – 5.6 - 5.10 Program 2 assigned Work on arrays</td>
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<tr>
<td>Fri., Sept. 30</td>
<td>Work on Program 2</td>
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<td>Chapter 6 – User-Defined Methods, 6.1 - 6.4 Work with the debugger</td>
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<tr>
<td>Mon., Oct. 3</td>
<td>Chapter 6 – User-Defined Methods, 6.5 – 6.9</td>
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<td>Tues., Oct. 4</td>
<td>Last day to drop classes</td>
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<tr>
<td>Wed., Oct. 5</td>
<td>Chapter 6 – User-Defined Methods, 6.10 – 6.13 Work on Program 2</td>
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<tr>
<td>Fri., Oct. 7</td>
<td>Review user-defined methods and arrays Work on Program 2</td>
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<tr>
<td>Mon., Oct. 10</td>
<td>Review user-defined methods and arrays Work on Program 2</td>
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<tr>
<td>Wed., Oct. 12</td>
<td>General review Work on Program 2 Program 2 due at midnight</td>
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<td>Fri., Oct. 14</td>
<td>Chapter 7, Objects and Classes, 7.1 – 7.5 Program 3 assigned</td>
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<tr>
<td>Mon., Oct. 17</td>
<td>Chapter 7 – Objects and Classes, 7.6 – 7.10 Work Program 3</td>
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<tr>
<td>Fri., Oct. 21</td>
<td>Fall Break – no class</td>
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<tr>
<td>Wed., Oct. 26</td>
<td>Review objects and classes Work on Program 3</td>
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<td>Date</td>
<td>Activity</td>
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<tr>
<td>Fri., Oct. 28</td>
<td>Test 2 – Chapters 5, 6, and 7</td>
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| Mon., Oct. 31| Work on Program 3  
Program 3 due at midnight  
Halloween! Wear a costume and join us for the party at 3:15! |
| Wed., Nov. 2 | Chapter 7 – 7.15 - 7.17  
Program 4 assigned                                                        |
| Fri., Nov. 4 | Review Objects and Classes  
Chapter 10 – Inheritance, 10.1 – 10.3  
Work on Program 4                                                         |
| Mon., Nov. 7 | Chapter 9 – Input/Output, 9.1 – 9.5  
Work on Program 4                                                          |
| Wed., Nov. 9 | Chapter 8 – Memory Management, 8.1 – 8.6  
Work on Program 4                                                          |
| Fri., Nov. 11| Review for test  
Work on Program 4                                                          |
| Mon., Nov. 14| Test 3                                                                   |
| Wed., Nov. 16| Chapter 16 – GUls, 16.1 – 16.4  
Work on Program 4  
Program 4 due at midnight                                                   |
| Fri., Nov. 18| Chapter 16 – GUls, 16.5 – 16.7  
Program 5 assigned                                                         |
| Mon., Nov. 21| Chapter 16 – GUls, 16.8 – 16.11  
Work on Program 5                                                          |
| Nov. 23 – Nov. 27| Thanksgiving Break                                                        |
| Mon., Nov. 28| Review GUls  
Work on Program 5                                                         |
| Wed., Nov. 30| Chapter 12 – Recursion, 12.1 – 12.4                                       |
| Fri., Dec. 2 | Chapter 12 – Recursion, 12.5 – 12.9                                       |
| Mon., Dec. 5 | Review recursion  
Do recursive programs together in class                                    |
| Wed., Dec. 7 | Review for final exam  
Work on Program 5                                                             |
| Fri., Dec. 9 | Review for final exam  
Work on Program 5  
Program 5 due at midnight                                                    |
| Mon., Dec. 12| Final Exam, 9 AM until noon if you are in the 9:30 – 10:15 class           |
| Tues., Dec. 13| Final Exam, 2 PM until 5 PM if you are in the 2:00 – 3:15 class            |