

INTRODUCTION TO COMPUTER SCIENCE - JAVA

North Brunswick Township Public Schools

Acknowledgements

Vivian S. Morris

Math/Computer Science Teacher

Diane Galella

Supervisor of the Math Department

Written SPRING 2003

Revised April 2008

TABLE OF CONTENTS

BACKGROUND – INTRODUCTION	P 3
FIRST JAVA PROGRAMS	P 5
SYNTAX, ERRORS, AND DEBUGGING	P 7
INTRODUCTION TO CONTROL STRUCTURES	P 11
PROGRAMMING THE GRAPHING CALCULATOR – TI82, 83 & 83+	P 14
CONTROL STRUCTURES CONTINUED	P 15

Course Description

In the Spring of 2004, College Board will change the language used for the AP Computer Science test from C++ to JAVA. In order to prepare our students for the AP Computer Science course which will focus on preparing the student to take the test, the language of the Intro to Comp. Science course is being changed to JAVA.

This course will introduce the student to programming fundamentals and the JAVA programming language(using BlueJ and JCreator) with application to solving real world problems. As a one semester course the student will be provided with a foundation of structured programming while integrating the concept of object-oriented programming. For seniors, this course should give a student who is interested in pursuing the field of computer science or a related field, an introduction into object oriented language. For the underclass student who wants to further pursue the AP course in Computer Science, this course will provide an introduction on which the AP Course will build upon.

In addition to the New Jersey Core Curriculum Content Standards for Mathematics, we would be remiss not to look at the standards for Technological Literacy. “The technology education standard was developed to ensure the technical literacy needed by all students to succeed in a highly technological world”. While the standard emphasizes the skills needed in the workplace, it lacks in emphasizing the understanding and the underlying concepts that allow those skills to work. This is what this course, Introduction to Computer Science, exposes the student to. In attempting to include the standards into this document, the only ones that could apply at some level to the entire curriculum are the following: 8.1.A4, 8.1.D1, 8.2.A3, 8.2.B1,2,4

COURSE OF STUDY

Chapter or Unit: **BACKGROUND - INTRO**

OBJECTIVES	MATERIALS/ MANIPULATIVES	SUGGESTED STRATEGIES	ASSESSMENT State, Teacher made, District	PACING	NJ CORE CURRICULUM STANDARD
Describe the difference between hardware and software Discuss the “evolution” of programming languages	Text Teacher demonstration computer	<ul style="list-style-type: none"> Power pt slide show – list of hardware vs software, 	Hwk. P 9 #1-5	1day	4.5.12 .C3&4 4.5.12 .F1-6
Discuss the fundamental concepts of object-oriented languages – understand the advantages of JAVA	Text Teacher demonstration computer	<ul style="list-style-type: none"> Power pt slide show – discuss specifics about JAVA 	Hwk p 16 #1,2,4	1day	4.5.12 .C3&4 4.5.12 .F1-6
Create objects of circles and apply the methods of circles code to create a picture	Text Student Computer Teacher demonstration computer	<ul style="list-style-type: none"> Power pt slide show Using BlueJ, demonstrate the circle class – how to create circles of different diameter/ color 	Programming exercise to create circles of different diameter/color	1day	4.5.12 .C3&4 4.5.12 .F1-6
Add a constructor to the circle class, and either square or triangle class	Text Student Computer Teacher demonstration computer	<ul style="list-style-type: none"> Demonstrate how to add a constructor to the circle class to ask the user for the diameter and color 	Lab – adding a constructor to the triangle class or square class	2days	4.5.12 .C3&4 4.5.12 .F1-6

Chapter or Unit: BACKGROUND - INTRO

OBJECTIVES	MATERIALS/ MANIPULATIVES	SUGGESTED STRATEGIES	ASSESSMENT State, Teacher made, District	PACING	NJ CORE CURRICULUM STANDARD
Using the picture project, introduce the concept of inheritance	Text Student Computer Teacher demonstration computer	<ul style="list-style-type: none"> Demonstrate the picture project – discuss how objects can create objects 	Programming exercise to load/execute/compile the picture project Hwk. Worksheet	1 day	4.5.12 .C3&4 4.5.12 .F1-6
Understand/list the steps to the software development cycle	Text Teacher demonstration computer	<ul style="list-style-type: none"> Power point slide show – list discuss 6 steps to program development 	Hwk. P 19 #1-4 P 20 #2-3	1 day	4.5.12 .C3&4 4.5.12 .F1-6
Apply picture objects	Text Student Computer Teacher demonstration computer	<ul style="list-style-type: none"> Modify picture project to use methods from square, circle and triangle class 	Lab – students must make sun set and add a minimum of one other part to the picture	4 days	4.5.12 .C3&4 4.5.12 .F1-6
		<ul style="list-style-type: none"> 			

Chapter or Unit: FIRST JAVA PROGRAMS

OBJECTIVES	MATERIALS/ MANIPULATIVES	SUGGESTED STRATEGIES	ASSESSMENT State, Teacher made, District	PACING	NJ CORE CURRICULUM STANDARD
Using BlueJ/JCreator, edit, compile and run a simple JAVA program	Text Student Computer Teacher demonstration computer	<ul style="list-style-type: none"> demonstrate how to create a project, edit, save, compile and run a program 	Programming assignment: Students to create a program that outputs “Java is Hot”	1 day	4.5.12 .C3&4 4.5.12 .F1-6
Describe the structure of a simple JAVA program	Text Student Computer Teacher demonstration computer	<ul style="list-style-type: none"> Power point slide show Using the “Java is Hot” code, identify the various parts of the code 	Hwk – p 28#1-3 P 32 #2 & 4	1 day	4.5.12 .C3&4 4.5.12 .F1-6
Understand compile-time errors	Text Student Computer Teacher demonstration computer	<ul style="list-style-type: none"> Demonstrate how missing a semicolon, misspelling, or not using upper case creates a compile time error – discuss the error messages 	Hwk – p 38 #1-3	1 day	4.5.12 .C3&4 4.5.12 .F1-6
Apply writing a simple JAVA program	Text Student Computer Teacher demonstration computer	<ul style="list-style-type: none"> Discuss project/lab 	Lab – write own simple JAVA program	1 day	4.5.12 .A1&2 4.5.12 .B1-4 4.5.12 .C3&4 4.5.12 .F1-6

Chapter or Unit: FIRST JAVA PROGRAMS

OBJECTIVES	MATERIALS/ MANIPULATIVES	SUGGESTED STRATEGIES	ASSESSMENT State, Teacher made, District	PACING	NJ CORE CURRICULUM STANDARD
Review and apply objective relating to creating a simple JAVA program. fundamental concepts on programming and Blue J.	Text Teacher demonstration computer	<ul style="list-style-type: none"> • Power point slide show - review 	Review/Test on Ch1, 2 & BlueJ	2 days	4.5.12 .A1&2 4.5.12 .B1-4 4.5.12 .C3&4 4.5.12 .F1-6
		<ul style="list-style-type: none"> • 			
		<ul style="list-style-type: none"> • 			
		<ul style="list-style-type: none"> • 			

Chapter or Unit: SYNTAX, ERRORS, AND DEBUGGING

OBJECTIVES	MATERIALS/ MANIPULATIVES	SUGGESTED STRATEGIES	ASSESSMENT State, Teacher made, District	PACING	NJ CORE CURRICULUM STANDARD
Understand the basic language elements of JAVA, syntax and semantics	Text Student Computer Teacher demonstration computer	<ul style="list-style-type: none"> Power point slide show – demonstrate creating a method that requires user input, does a calculation & outputs result (converting degrees F to C) 	Programming assignment: students to implement program of conversion	1 day	4.5.12 .A1&2 4.5.12 .B1-4 4.5.12 .C3&4 4.5.12 .F1-6
Implement Easyreader – discuss various methods if input	Text Student Computer Teacher demonstration computer	<ul style="list-style-type: none"> Power point slide show- demonstrate modifying convert program to be made user friendly by using EasyReader & Prompts vs pop-up box 	Programming assignment: students to modify their convert program	1 day	4.5.12 .A1&2 4.5.12 .B1-4 4.5.12 .C3&4 4.5.12 .F1-6
Construct and use numeric and string variables	Text Teacher demonstration computer	<ul style="list-style-type: none"> Power point slide show – discuss difference between integer & double (real) data types – mathematically & computer storage requirements 	Hwk: p. 54-55 #1,3,4	1 day	4.5.12 .A1&2 4.5.12 .B1-4 4.5.12 .C3&4 4.5.12 .F1-6
Name and use variables and constants, identify data types needed	Text Student Computer Teacher demonstration computer	<ul style="list-style-type: none"> Power point slide show – defining a constant, when/how to use “final” ex final double PI = 3.14159 Declaring and initializing variables 	Programming assignment – write a method that uses PI to calculate the area and circumference of a circle Hwk: p. 57 #6,8,9,10,11	1 day	4.1.A1 4.5.12 .A1&2 4.5.12 .B1-4 4.5.12 .C3&4 4.5.12 .F1-6

Chapter or Unit: SYNTAX, ERRORS, AND DEBUGGING

OBJECTIVES	MATERIALS/ MANIPULATIVES	SUGGESTED STRATEGIES	ASSESSMENT State, Teacher made, District	PACING	NJ CORE CURRICULUM STANDARD
Create a simple JAVA program involving EasyReader and numeric calculations	Text Student Computer Teacher demonstration computer	<ul style="list-style-type: none"> Implement concepts discussed thus far by creating simple JAVA programs 	Programming Assignment: 1)convert years to minutes 2)creating yield sign	2 day	4.1.B1 4.5.12 .A1&2 4.5.12 .B1-4 4.5.12 .C3&4 4.5.12 .F1-6
Create arithmetic expressions – mathematical order of operations Understand the precedence of different arithmetic operators as an extension of the math order of operations – use of the modulus operator	Text Student Computer Teacher demonstration computer	<ul style="list-style-type: none"> Power point slide show – discuss precedence of arithmetic operators Simple math expressions Implementing the modulus operator 	Programming assignment: converting minutes to days, hours, and minutes Hwk: p 61 #12 & 13	3/4 days	4.5.12 .A1&2 4.5.12 .B1-4 4.5.12 .C3&4 4.5.12 .F1-6
Using mixed mode arithmetic	Text Teacher demonstration computer	<ul style="list-style-type: none"> Power point slide show – discuss uniqueness of mixed mode arithmetic to computers vs math class Importance of assigning variables data types and problems that can occur in assignment statements 	Hwk: p 62 #14 & 15	2 /3days	4.1.B1 4.5.12 .A1&2 4.5.12 .B1-4 4.5.12 .C3&4 4.5.12 .F1-6

Chapter or Unit: SYNTAX, ERRORS, AND DEBUGGING

OBJECTIVES	MATERIALS/ MANIPULATIVES	SUGGESTED STRATEGIES	ASSESSMENT State, Teacher made, District	PACING	NJ CORE CURRICULUM STANDARD
Concatenate 2 strings, or a number and a string	Text Student Computer Teacher demonstration computer	<ul style="list-style-type: none"> Power point slide show – using concatenation, declaring strings, precedence, use of escape character 	Hwk: p 65#28 & 19 Programming Assignment: create program that asks for first and last name, house number, state and zip and outputs information in a nice format	1 day	4.5.12 .A1&2 4.5.12 .B1-4 4.5.12 .C3&4 4.5.12 .F1-6
Understand the rules for creating an identifier	Text Teacher demonstration computer	<ul style="list-style-type: none"> Power point slide show – discuss rules for creating user defined symbols – review list of JAVA’s reserved words (p. 67) 	Hwk p 68 #23 & 24	1 day	4.5.12 .A1&2 4.5.12 .B1-4 4.5.12 .C3&4 4.5.12 .F1-6
Know how and when to use comments in a program	Text Teacher demonstration computer	<ul style="list-style-type: none"> Power point slide show – single line vs multiple line comments Use of comments Too many vs too few comments 		1 day	4.5.12 .A1&2 4.5.12 .B1-4 4.5.12 .C3&4 4.5.12 .F1-6
Tell the difference between syntax errors, runtime errors and logic errors	Text Teacher demonstration computer	<ul style="list-style-type: none"> Power point slide show – discuss three types of errors, when they occur, how to remediate/debugging 	Hwk: p. 80 #1-3	2 days	4.5.12 .A1&2 4.5.12 .B1-4 4.5.12 .C3&4 4.5.12 .F1-6

<p>Write a simple JAVA program using calculations requiring user input</p> <p>Review and apply concepts of creating a simple JAVA program, syntax, errors and debugging</p>	<p>Text</p> <p>Student Computer</p> <p>Teacher demonstration</p> <p>computer</p>	<ul style="list-style-type: none"> • Power point slide show • Review/Test 	<p>Review/test</p>	<p>4 days</p>	<p>4.5.12 .A1&2</p> <p>4.5.12 .B1-4</p> <p>4.5.12 .C3&4</p> <p>4.5.12 .F1-6</p>
---	--	---	--------------------	---------------	---

Chapter or Unit: INTRODUCTION TO CONTROL STRUCTURES

OBJECTIVES	MATERIALS/ MANIPULATIVES	SUGGESTED STRATEGIES	ASSESSMENT State, Teacher made, District	PACING	NJ CORE CURRICULUM STANDARD
Use if/if-else statements to make choices in code Apply use of if/else statements	Text Student Computer Teacher demonstration computer	<ul style="list-style-type: none"> Power point slide show – demonstrate syntax of if/else and if statements Discuss relational operators: < , <= , > , >= , == , != 	Hwk: p 100-101 # 1-7 Programming Assignment: modify last lab to work with hours > 40 to calculate overtime wages	2 days	4.5.12 .A1&2 4.5.12 .B1-4 4.5.12 .C3&4 4.5.12 .F1-6
Use increment and decrement operators	Text Teacher demonstration computer	<ul style="list-style-type: none"> Power point slide show – use of +=, -=, *=, /=, %= for int, double and string Use of x++, x—to increase/decrease by 1 	Hwk: p 92 #1,2	1 day	4.5.12 .A1&2 4.5.12 .B1-4 4.5.12 .C3&4 4.5.12 .F1-6
Use standard math methods	Text Student Computer Teacher demonstration computer	<ul style="list-style-type: none"> Power point slide show – demonstrate use of math class methods for absolute value, power, rounding, maximum, minimum and square root 	Hwk p 95 #1 Programming assignment: create a project called math methods – withing create 2 methods 1)finding zeros of a quadratic, 2) finding hypotenuse of a rt triangle given 2 sides	4 days	4.5.12 .A1&2 4.5.12 .B1-4 4.5.12 .C3&4 4.5.12 .F1-6

Chapter or Unit: INTRODUCTION TO CONTROL STRUCTURES

OBJECTIVES	MATERIALS/ MANIPULATIVES	SUGGESTED STRATEGIES	ASSESSMENT State, Teacher made, District	PACING	NJ CORE CURRICULUM STANDARD
Use of for loop to repeat a process – syntax Apply use of a for loop	Text Student Computer Teacher demonstration computer	<ul style="list-style-type: none"> • Power point slide show – discuss 4 parts to a loop, syntax of a loop • Examples of loop counting forward and backwards • Incrementing/decrementing by 1 	Hwk: p 109 # 1& 2 Programming Assignment – add 2 more methods to math methods 1) factorial 2) permutation	5 days	4.5.12 .A1&2 4.5.12 .B1-4 4.5.12 .C3&4 4.5.12 .F1-6
Using messages & methods Returning values from one method/project to another method/project	Text Student Computer Teacher demonstration computer	<ul style="list-style-type: none"> • Power point slide show - discuss difference between message & method 	Programming Assignment: Create a class “menu” that accesses the “math methods” class and sends messages to the various methods	3 days	4.5.12 .A1&2 4.5.12 .B1-4 4.5.12 .C3&4 4.5.12 .F1-6
Use of a while loop to repeat a process	Text Student Computer Teacher demonstration computer	<ul style="list-style-type: none"> • Power point slide show – demonstrate syntax of a while loop, identify 4 parts of a loop • Test value – boolean expression 	Programming Assignment: apply while loop to menu so user can use more than 1 method consecutively until user chooses “End”	1 day	4.5.12 .A1&2 4.5.12 .B1-4 4.5.12 .C3&4 4.5.12 .F1-6
Detect and correct common errors involving loops	Text Teacher demonstration computer	<ul style="list-style-type: none"> • Power point slide show – discuss 4 types of errors in loops, where they occur and how to remediate. 	Hwk P 199 #1	1 days	4.5.12 .A1&2 4.5.12 .B1-4 4.5.12 .C3&4 4.5.12 .F1-6

Chapter or Unit: INTRODUCTION TO CONTROL STRUCTURES

OBJECTIVES	MATERIALS/ MANIPULATIVES	SUGGESTED STRATEGIES	ASSESSMENT State, Teacher made, District	PACING	NJ CORE CURRICULUM STANDARD
Review/Apply syntax, use of control structures	Text Student Computer Teacher demonstration computer	<ul style="list-style-type: none"> • Implement objective by creating new methods • Review/Test 	LAB - Add to math methods class (modify Menu) to 1)find the average of a group of numbers, 2) combinations 3)find the side of a triangle given the hypotenuse and one side Review Test	5 days	4.5.12 .A1&2 4.5.12 .B1-4 4.5.12 .C3&4 4.5.12 .F1-6
		•			
		•			

Chapter or Unit: PROGRAMMING THE GRAPHING CALCULATOR – TI82 , TI83, TI83+

OBJECTIVES	MATERIALS/ MANIPULATIVES	SUGGESTED STRATEGIES	ASSESSMENT State, Teacher made, District	PACING	NJ CORE CURRICULUM STANDARD
Write a simple program using the graphing calculator	TI Grapher overhead	<ul style="list-style-type: none"> • demonstrate how to create, edit, execute simple programs on the TI83 graphing calculators • finding area and circumference of a circle given r • find roots of a quadratic given a,b,c 		2 days	4.5.12 .A1&2 4.5.12 .B1-4 4.5.12 .C3&4 4.5.12 .F1-6
		•			
		•			
		•			
		•			

Chapter or Unit: CONTROL STRUCTURES CONTINUED

OBJECTIVES	MATERIALS/ MANIPULATIVES	SUGGESTED STRATEGIES	ASSESSMENT State, Teacher made, District	PACING	NJ CORE CURRICULUM STANDARD
Understand the logic/syntax of nested loops	Text Student Computer Teacher demonstration computer	<ul style="list-style-type: none"> • Power point slide show – syntax of nested loops • Creation of “new Line” to make output look “nice’ • Demonstrate times table 	Programming Assignment: implement times table Lab: write a method to determine the number of coins that make up a given amount of \$\$ Hwk: p 193 1, 2b P 194 1b, 3	2 days	4.5.12 .A1&2 4.5.12 .B1-4 4.5.12 .C3&4 4.5.12 .F1-6
Construct complex Boolean expressions using the logical operators &&(and), (or) and ! (not) and their truth tables	Text Teacher demonstration computer	<ul style="list-style-type: none"> • Construct truth tables using “and”, “or” and “not” • State the JAVA symbols: &&, , ! • Write compound statements and evaluate 	Hwk: p 176 #1 – 4	2 days	4.5.12 .A1&2 4.5.12 .B1-4 4.5.12 .C3&4 4.5.12 .F1-6
Apply us of the logic of Boolean expressions in nested IF statements and extended IF statements	Text Student Computer Teacher demonstration computer	<ul style="list-style-type: none"> • Power point slide show – demonstrate precedence order (see p 172) 	Programming Assignment – using average method, use compound if’s to convert the average to a letter grade	2 days	4.5.12 .A1&2 4.5.12 .B1-4 4.5.12 .C3&4 4.5.12 .F1-6

Chapter or Unit: CONTROL STRUCTURES CONTINUED

OBJECTIVES	MATERIALS/ MANIPULATIVES	SUGGESTED STRATEGIES	ASSESSMENT State, Teacher made, District	PACING	NJ CORE CURRICULUM STANDARD
Create appropriate/comprehensive test cases for IF statements	Text Teacher demonstration computer	<ul style="list-style-type: none"> Power point slide show – discuss boundary conditions and appropriate test data to test all aspects of a program 	Hwk p 184-5 #1,2,4,5	2 days	4.5.12 .A1&2 4.5.12 .B1-4 4.5.12 .C3&4 4.5.12 .F1-6
Review/Apply use of Boolean expressions, nested loops and nested if/if else statements	Text Student Computer Teacher demonstration computer	<ul style="list-style-type: none"> Apply concepts Review/Test 	Lab - 1)using boundaries for SAT verbal and Math scores & GPA determine if a student is accepted early/regular decision, waitlisted, rejected . 2) Using Euclidian algorithm, find the gcd of 2 positive integers Review/Test	5 days	4.5.12 .A1&2 4.5.12 .B1-4 4.5.12 .C3&4 4.5.12 .F1-6
		<ul style="list-style-type: none"> 			

BIBLIOGRAPHY

Primary textbook used throughout this course:
Fundamentals of JAVA, 2nd edition. Lambert & Osborne, South-Western 2003

Software used throughout this course:
BlueJay – University of Denmark
Jcreator
SUN SDK

INTRO TO COMPUTER SCIENCE PROGRAMMING using JAVA (2534)

Grades: 10,11,12

2.5 Credits - 1 Semester

Pre-Requisite: Algebra I and Geometry

Co-Requisite: Algebra II

This course will introduce the student to programming fundamentals and the JAVA programming language (using BlueJ and JCreator) with application to solving “real world problems”. This course provides the student with a foundation of structured programming while focusing on the concept of object-oriented programming.

At the completion of this course, the student will be able to:

- understand the difference between compiled and interpreted programs
- understand/apply the basic concepts of object oriented programming (OOP) to write “short programs”.
- use simple input and output statements
- define/use variable types according to use, as well as constants
- employ the fundamental math operators
- apply control structures simple and nested: branching and looping.
- define classes, and methods within those classes
- use JAVA library math class

Course Requirements:

- Students will be expected to bring to class daily those items used for the days lesson: text, notebooks etc.
- Students will be expected to complete all assignments, both programming and nonprogramming, on time.
- Students will be expected to successfully complete all tests, and projects on time
- Students who are absent are expected to arrange with the teacher times for making up assignments, labs, and tests.
- Students are expected to keep the computer lab tidy - PLEASE RECYCLE!!! THERE WILL BE NO FOOD OR DRINK IN THE LAB!!!!
- Students may share ideas, however each program must contain some originality. Students who are found “sharing the work” will result in a zero grade for both students.
- Any student found to be mistreating the equipment, tampering with software or using the equipment in a non-educational fashion will face disciplinary actions

Marking period grades will be determined by the following percentages:

	1 st	2 nd
TESTS/QUIZZES	55	50
PROGRAMS/PROJECTS	25	30
HOMEWORK/CLASSWORK	10	10
CLASS GRADE	10	10

Subject: INTRO TO COMPUTER SCIENCE - JAVA

TIME LINE	CONTENT	SKILLS	ASSESSMENT	NJC CCS
2 ½ wks	Background – Introduction	<ul style="list-style-type: none"> Describe the difference between hardware and software Discuss the “evolution” of programming languages Discuss the fundamental concepts of object-oriented languages – understand the advantages of JAVA 	Programming assignments/discovery activities Student Oral Responses Homework Programming Labs Teacher made Tests	4.5.C3&4 4.5.F1-6
	Use BlueJ	<ul style="list-style-type: none"> Create objects of circles and apply the methods of circles code to create a picture Add a constructor to the circle class, and either square or triangle class Use the picture project to introduce the concept of inheritance Understand/list the steps to the software development cycle Apply picture object 	Programming assignments/discovery activities Student Oral Responses Homework Programming Labs Teacher made Tests	4.5.C3&4 4.5.F1-6
1 wk	First Java Programs	<ul style="list-style-type: none"> Use BlueJ/JCreator, to edit, compile and run a simple JAVA program Describe the structure of a simple JAVA program 	Programming assignments/discovery activities Student Oral Responses Homework Programming Labs Teacher made Tests	4.5.A1&2 4.5.B1-4 4.5.C3&4 4.5.F1-6 8.1.A4, 8.1.D1, 8.2.A3, 8.2.B1,2,4

Subject: <u>INTRO TO COMPUTER SCIENCE - JAVA</u>				Page 2 of 4
TIME LINE	CONTENT	SKILLS	ASSESSMENT	NJC CCS
3 wks	First Java Programs (cont)	<ul style="list-style-type: none"> • Understand compile-time errors • Apply writing a simple JAVA program • Review and apply objective relating to creating a simple JAVA program. fundamental concepts on programming and Blue J. 	Programming assignments/discovery activities Student Oral Responses Homework Programming Labs Teacher made Tests	4.5.A1&2 4.5.B1-4 4.5.C3&4 4.5.F1-6 8.1.A4, 8.1.D1, 8.2.A3, 8.2.B1,2,4
	Syntax, Errors and Debugging	<ul style="list-style-type: none"> • Understand the basic language elements of JAVA, syntax and semantics • Implement Easyreader – discuss various methods if input • Construct and use numeric and string variables 	Programming assignments/discovery activities Student Oral Responses Homework Programming Labs Teacher made Tests	4.5.A1&2 4.5.B1-4 4.5.C3&4 4.5.F1-6 8.1.A4, 8.1.D1,

		<ul style="list-style-type: none">• Name and use variables and constants, identify data types needed• Create a simple JAVA program involving EasyReader and numeric calculations• Create arithmetic expressions – mathematical order of operations• Understand the precedence of different arithmetic operators as an extension of the math order of operations – use of the modulus operator• Use mixed mode arithmetic to do calculations• Create arithmetic expressions – mathematical order of operations		8.2.A3, 8.2.B1,2,4
--	--	--	--	-----------------------

Subject: INTRO TO COMPUTER SCIENCE - JAVA

TIME LINE	CONTENT	SKILLS	ASSESSMENT	NJC CCS
5 wks	Syntax, Errors & Debugging (cont.) Introduction to Control Structures	<ul style="list-style-type: none"> • Understand the precedence of different arithmetic operators as an extension of the math order of operations – use of the modulus operator • Understand the rules for creating an identifier • Know how and when to use comments in a program • Tell the difference between syntax errors, runtime errors and logic errors • Write a simple JAVA program using calculations requiring user input • Review and apply concepts of creating a simple JAVA program, syntax, errors and debugging • Use if/if-else statements to make choices in code • Apply use of if/else statements • Use increment and decrement operators • Use standard math methods • Use of for loop to repeat a process – syntax • Apply use of a for loop • Use messages & methods • Return values from one method/class to another method/class 	Programming assignments/discovery activities Student Oral Responses Homework Programming Labs Teacher made Tests Programming assignments/discovery activities Student Oral Responses Homework Programming Labs Teacher made Tests	4.5.A1&2 4.5.B1-4 4.5.C3&4 4.5.F1-6 8.1.A4, 8.1.D1, 8.2.A3, 8.2.B1,2,4 4.5.A1&2 4.5.B1-4 4.5.C3&4 4.5.F1-6 8.1.A4, 8.1.D1, 8.2.A3, 8.2.B1,2,4

--	--	--	--	--

Subject: INTRO TO COMPUTER SCIENCE - JAVA

TIME LINE	CONTENT	SKILLS	ASSESSMENT	NJC CCS
5 wks	<p>Introduction to Control Structures (cont)</p> <p>Control Structures Continued</p>	<ul style="list-style-type: none"> • Use of a while loop to repeat a process • Detect and correct common errors involving loops • Review/Apply syntax, use of control structures → Lab • Understand the logic/syntax of nested loops • Construct complex Boolean expressions using the logical operators &&(and), (or) and ! (not) and their truth tables • Apply us of the logic of Boolean expressions in nested IF statements and extended IF statements • Create appropriate/comprehensive test cases for IF statements • Review/Apply use of Boolean expressions, nested loops and nested if/if else statements→Lab 	<p>Programming assignments/discovery activities</p> <p>Student Oral Responses</p> <p>Homework</p> <p>Programming Labs</p> <p>Teacher made Tests</p> <p>Programming assignments/discovery activities</p> <p>Student Oral Responses</p> <p>Homework</p> <p>Programming Labs</p> <p>Teacher made Tests</p>	<p>4.5.A1&2</p> <p>4.5.B1-4</p> <p>4.5.C3&4</p> <p>4.5.F1-6</p> <p>8.1.A4,</p> <p>8.1.D1,</p> <p>8.2.A3,</p> <p>8.2.B1,2,4</p> <p>4.5.A1&2</p> <p>4.5.B1-4</p> <p>4.5.C3&4</p> <p>4.5.F1-6</p> <p>8.1.A4,</p> <p>8.1.D1,</p> <p>8.2.A3,</p> <p>8.2.B1,2,4</p>
3 days	<p>Program the TI-82, 83, 83+</p>	<p>Write a simple program using the graphing calculator(note: this topic can be inserted prior to a vacation or any other convenient time</p>		<p>4.5.A1&2</p> <p>4.5.B1-4</p> <p>4.5.C3&4</p> <p>4.5.F1-6</p>

				8.1.A4, 8.1.D1, 8.2.A3, 8.2.B1,2,4
--	--	--	--	---