

Lesson	Date	Day	Unit	Lesson Objective Content (typically - 70 minute total class time: 30 minute instructor examples, minimum 40 minute student application)	Resource Materials: Big Java (BJ); Fundamentals of Java (FJ)	Assessments, Application & Computer Labs/Projects	REM	Instructor
0	1/7/19	Mon					PD - Teacher Work Day	
1	1/8/19	Tue	Intro	Introductions, Class Rules, Issue materials, discuss/demonstrate: course content and	Visit numerous study material websites. Video on Computer science	Install JDK, NetBeans, Eclipse	Start 3rd Qtr.	
2	1/9/19	Wed						
3	1/10/19	Thu	Basic Java Concepts	Review/teach use of One Note ; Anatomy of Computers; Computer Programs Basics; Basic algorithms	Install JDK,+ NetBeans; Eclipse; Instructor examples of working code: basic(legacy), VB, and Java basic programs and use of pseudocode.	Visit instructor website. Acquire, download / install software required software and apps; set Path environmental variable		
4	1/11/19	Fri		Basic computer software design - algorithms	Create Algorithm and Write pseudocode	Practice Worksheet		
5	1/14/19	Mon		Basic computer software design - algorithms	Write pseudocode	Graded Worksheet		
6	1/15/19	Tue		The Java Programming Language - description of the basic building blocks. Introduction to Eclipse/NetBeans IDEs	BJ Sections 1.1 - 1.6; FJ 1.6	BJ - Complete Review Questions: R1.09, R1.10, and R1.11; BJ Exercises E 1.1 thru 1.10; FJ - Exercises 1-5 on page 26	Delayed Start	
7	1/16/19	Wed		Writing your first program, Embellishing your first program. Error checking.				
8	1/17/19	Thu		Problem Solving: Algorithm design, development, and techniques. Use of pseudo code.	Study BJ Sec 1.7 with worked example on Page 23	BJ - Complete Review Questions: R1.09, R1.10, and R1.11; BJ Exercises E 1.1 thru 1.15		
9	1/18/19	Fri		Programming - Complete P 1.1, P 1.2, P 1.3, and P 1.4	BJ pages 29-30	FOR GRADE: For each problem, by problem, submit code and output as an email attachment to mheinen1@msn.com		
	1/21/19	Mon				No school - Martin Luther King Day		
10	1/22/19	Tue	Assessment	Exam 1 - 25 minutes (minimum) written / 45 minutes basic programming assessment	All previous instruction - Basics from the 1st/2nd week - Infinite Series Worksheet [sin(x)]			
11	1/23/19	Wed	Using Objects	Teach Objects and Classes in more detail;	BJ Sections 2.1			
12	1/24/19	Thu		Variables: declaration, types, names, reserved words, assignment, choosing descriptive names	BJ Section 2.2	BJ Review ex:2.3, 2.4, 2.6		
13	1/25/19	Fri		Calling methods: The public method, method arguments, return values, method declarations	BJ Section 2.3	BJ Programming Project P2.7 (Gregorian Calendar class)		
14	1/28/19	Mon		Constructing objects, Using accessor and mutator methods. Use of "Setter" and "Getter" methods.	BJ Section 2.4 - 2.5 + Setter and Getter Worksheet			
16	1/30/19	Wed		Study basic JAVA API documentation and packages ; object references; Implementing an APP (TESTER) PROGRAM	BJ Section 2.6 - 2.8			
17	1/31/19	Thu			BJ Practical exercises: E2.1, E2.7, E2.13			
18	2/1/19	Fri	Project	Project 1 - Basic Mathematical Operations with Multiple Classes	See example Project 1 at www.markeredwards.com			
19	2/4/19	Mon	Implementing Classes	Study instance variables and encapsulation	BJ 3.1	Study, program, and test the BankAccount class using BankAccountTester.java		AH
20	2/5/19	Tue		Specifying the public interface of a class, specify methods (void or return); specifying types of constructors; commenting the public interface	BJ 3.2			AH
21	2/6/19	Wed		Implementing the BankAccount class: instance variable, constructors, and providing methods	BJ 3.3 - 3.4			AH
22	2/7/19	Thu						AH
23	2/8/19	Fri						AH
24	2/11/19	Mon		Problem Solving: Tracing errors in objects (intro to debug using Netbeans/Eclipse)	BJ 3.5		Rev Ex: R3.18-R3.20	

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25	2/12/19	Tue		Study local variables (and potential errors) and the "this." reference	BJ 3.6 - 3.7	Lab Prac ex E3.8 (class Employee) and E3.9 (class car)			
26	2/13/19	Wed	Project	Project 2 - Delineated Lab time for practical exercises and Programming project P3.9	See example Project 2 at www.markeredwards.com . BJ Programming Project P3.9 (enhances the BankAccount class)		Delayed Start		
27	2/14/19	Thu	Assessment	Exam 2 - Using Objects and Classes - 45 minutes written / 45 minutes assessment in lab	All previous material.	100 Points			
28	2/15/19	Fri	Data Types	Number Types: primitive, number literals, constants, constant declaration. Teach/demonstrate BigInteger and BigDecimal class	BJ 4.1 (with use of CashRegister.java example)	Prac ex: E4.20			
	2/18/19	Mon						Winter Break	
	2/19/19	Tue							
29	2/20/19	Wed			Arithmetic Operators: increment/decrement, integer division and remainder, powers/roots (Math class), casting and converting numbers	BJ 4.2 + special topics	Lab Prac ex: E4.4 (multiple binary ops)		
30	2/21/19	Thu							
31	2/22/19	Fri			Input and output (Scanner class and formatted output - format specifiers)	BJ 4.3 + How To 4.1 exercise	Lab Prac ex: E4.7		
32	2/25/19	Mon			The String Type: strings and characters, string operations, concatenation, string input, substrings. <u>Exception handling.</u>	BJ 4.5	Lab Prac ex: E4.13, and Programming Exercise P4.11		
33	2/26/19	Tue						Use of loops and prisms	
34	2/27/19	Wed		Lab time for Programming Exercise P4.11				AH	
35	2/28/19	Thu	Project	Project 3 - Mountain Programming Problem (numerical integration)	See example Project 3 at: www.markeredwards.com	Study: https://en.wikipedia.org/wiki/Numerical_integration		AH	
36	3/1/19	Fri	Decision Statements	The If Statement, conditional operator + programming tips	BJ 5.1			AH	
37	3/4/19	Mon			relational operators: compare floating point numbers, compare Strings and	BJ 5.2	Complete How To 5.1 assignment		AH
38	3/5/19	Tue			Multiple alternatives and nested branches	BJ 5.3 - 5.4			AH
39	3/6/19	Wed				Lab Prac ex: E5.17		AH	
40	3/7/19	Thu	Loops	Problem Solving: Flow charts	BJ 5.5			AH	
41	3/8/19	Fri			Boolean Operators	BJ 5.7	Lab Prac ex: E5.12		AH
42	3/11/19	Mon			The while Loop with hand tracing	BJ 6.1 - 6.2	Lab Prac ex : E6.13		AH
43	3/12/19	Tue			The for Loop	BJ 6.3	Lab Prac ex : E6.12		AH
44	3/13/19	Wed			The do while Loop and Common loop algorithms	BJ 6.4 and 6.7	Lab Prac ex : E6.17	Delayed Start	AH
45	3/14/19	Thu	Project	Project 4 - Random Numbers and Simulations: See the Buffon Needle Problem at www.markeredwards.com	BJ 6.9 and Lab work for P6.8 (Buffon Needle Experiment)	Graded Simulation			
	3/15/19	Fri					End 3rd Qtr. - Flex Day		
	3/18/19	Mon					No School - PT release time		

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	3/19-22/19						Spring Break	
46	3/25/19	Mon	Assessment	Exam 3 - Data Types / Decision Statements / Loops - 45 minutes written / 45 minutes assessment in lab	All previous material.	100 Points	Start 4th Qtr.	
47	3/26/19	Tue	Arrays / Sorting	Declaring and using arrays; Array references; Array references; Partially	BJ 7.1	Lab Prac ex E7.1 and E7.7		AH
48	3/27/19	Wed		Common Array Algorithms (fill, average, max, min, search, remove insert, swap)	BJ 7.3	Lab Prac ex: 7.8		AH
49	3/28/19	Thu		More Searching and Sorting Arrays - bubble, merge, quick, selection, insertion sorts; sequential and binary search. Tracing (walk through)/ time considerations for search/sort algorithms	FJ Chapter 10; BJ Chapter 14	BJ Prac review R14.10 - 14.13		AH
50	3/29/19	Fri		Lab Array Practice	BJ 7.1 - 7-3	Lab Prac ex: E7.2- 7.7		AH
51	4/1/19	Mon		2-Dimensional Arrays: declaring, accessing elements, accessing rows and columns	BJ 7.6	Lab Prac ex: E7.16		AH
52	4/2/19	Tue		Array Lists - discuss application/advantages; Using ArrayList class	FJ Section 10.7; BJ 7.7	Lab Prac ex: E7.17		AH
53	4/3/19	Wed		Array List Methods (add, remove, set, get, etc.)	FJ Section 10.8; BJ 7.7	Science Programming Application: BJ P7.12		AH
54	4/4/19	Thu		Comparison between ArrayList and Array	BJ 7.78 with p. 354 assignment			AH
55	4/5/19	Fri		Project	Project 5- Magic Prime Project. See Primes-Magic Square at www.markeredwards.com			
56	4/8/19	Mon	Recursion	Teaching to think recursively - Triangle Numbers	BJ 13.1, recursion worksheet and AP CS-A Recursion Module	BJ Prac ex: E13.1, 13.2, 13.10		AH
57	4/9/19	Tue		Tracing recursive calls	FJ Section 13.1	FJ exercises 5,6 in Section 13.1	Delayed Start	AH
58	4/10/19	Wed		More recursive examples and practice	FJ Section 13.2			
59	4/11/19	Thu		More recursive examples and practice	FJ Section 13.3			
60	4/12/19	Fri	Lab Time	More recursive examples and practice	FJ Section 13.4			
61	4/15/19	Mon	Assessment	Exam 4 Written - Arrays / List Array / Recursion - 70 minutes written	All previous material.	100 Points		
62	4/16/19	Tue	Assessment	Exam 4 In Lab - Arrays / List Array / Recursion - 70 minutes	All previous material.	100 Points		
63	4/17/19	Wed	Project	Project 6 - Array Solver Project. See www.markeredwards for problem statement.				
64	4/18/19	Thu	Computer Ethics	Lab time for Projects 5 and 6	Teacher Notes and Problem Statement			
65	4/19/19	Fri		Students are to explore the social implications of computing systems (reliability, privacy, legal and intellectual property, social and ethical ramifications of computer use.	Handouts by the instructor and team research on line.	Teams of 2-4 students will be assigned specific topics to research. Teams will then present their findings to the class.		AH
66	4/22/19	Mon		Introduction to Inheritance Hierarchies and Polymorphism	BJ 9.1 + Section 1 Question.java on page 424	BJ Rev ex: 9.1,9.7,9.9		AH
67	4/23/19	Tue	nce, Abstract Classes, ces					
68	4/24/19	Wed						
69	4/25/19	Thu						
70	4/26/19	Fri						
71	4/29/19	Mon						

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72	4/30/19	Tue	More on Classes, Inheritance	Implementing subclasses	BJ 9.2 + common errors on page 430	BJ Rev ex: 9.6 and 9.10		AH			
73	5/1/19	Wed		Overriding methods for a super class	BJ 9.3 + Section 3 code on page 432 433	BJ Rev ex: 9.2 and 9.11		AH			
74	5/2/19	Thu		Abstract Classes / Final Methods and Classes / Protected Access	BJ 9.4 + Special Topics	Lab Business Programming Project: BJ P9.1 on page 459		AH			
	5/3/19	Fri		Lab time to complete Business Programming Project	BJ P9.1		No School - Blossom				
75	5/6/19	Mon	Assessment	More inheritance: Create and extend and an abstract class, Create and extend a class given class specifications with the relationship of the classes described	FJ Sections 115.5 - 11.7	Project 11-2 on page 438					
76	5/7/19	Tue	Special Project					MH			
77	5/8/19	Wed					Delayed Start	MH			
78	5/9/19	Thu			Exam 5 - Inheritance / Interfaces - 70 minutes written	All previous material.	100 Points		MH		
79	5/10/19	Fri			Intro to NPV (net Present Value) and IRR (internal Rate of Return) of Investments	Teacher Notes and Examples	Basically Polynomial root finding using Newton's method, etc.		MH		
80	5/13/19	Mon			Business Application Design Project to Calculate NPV and IRR for a list (series) of payments following an future cash outflow. Deterministic - not a stochastic problem)	Project Description by Instructor - Confirm with Excel	Study: https://en.wikipedia.org/wiki/Internal_rate_of_return		MH		
81	5/14/19	Tue									MH
82	5/15/19	Wed									MH
83	5/16/19	Thu									MH
84	5/17/19	Fri		Student Lab time for IRR/NPV Programming Project				MH			
85	5/20/19	Mon	Assessment	Practice AP Exam with Review of Approved Solution			Finals Week				
86	5/21/19	Tue									
87	5/22/19	Wed									
88	5/23/19	Thu		Float			CCHS Graduation				
89	5/24/19	Fri		Check Out			Mr. Heinen's Last Day of School (EVER)				
	5/27/19	Mon					Memorial Day				
	5/28/19	Tue					Flex Day				