APS 105 Lecture and Lab Schedule Winter 2019 Last Modified 1-Jan-19

Week #	Date of Monday	Lect #	Content	Carter Text Sections	Tutorial	Lab - Thursday, Friday of this week and Monday of Next	9am Wednesday Seminar/work in MS 2158 (prelab & special topics). Youtube video available after.
1	7-Jan	1	Introduction to Course; lab 0 discussion including software demo	1.2	No Tutorial	Lab 0 - Login to ECF; assign students to TAs; introduction to Linux and CodeLite	
		2	Structure of Computers: CPU, Memory, I/O; A simple program that inputs, computes and outputs.	1.1, 1.7, 1.8			
		3	Process of developing and debugging software; Example program with Fractional Variables, the 'double' type; rules for variable names	1.3, 1.4			
2	14-Jan	4	Representation of numbers in binary and effect of number of bits; Types of variables - int and double, Lab 1	1.5, 1.6		Lab 1 - Review Linux/CodeLite & A Simple Calculation	
		5	Example calculation program with input and output using printf and scanf general form; example calculation; Lab 1	1.8; Appendix B	Tutorial		
		6	Calculations: operators +-*/%, example program; math functions, random #s	2.1, 2.2, 2.6	1		
3	21-Jan	7	Random numbers and Rint(), mixing integers and doubles in calculations, casting; Lab 2 discussion	2.3, 2.5, 2.6		Lab 2 - More Complex Calculation	
		8	Making decisions example, if, else, conditional expressions, relational operators, control flow; BOOL Type; roulette example	3.1, 3.2,	Tutorial		
		9	Char Type - Comparing characters, complex logical expressions and conditions, lazy evaluation, multiple conditions, dangling else	3.3, 3.4,	2		
4	28-Jan	10	Repetition (loops) - example, while loop, flow, do while, example, Lab 3 Discussion	4.1, 4.2		Lab 3 - Decisions and Simple Loops	
		11	For loops, flow, example, when to use while, for, dowhile, complex conditions in for, nested loops; increment ++, decrement;	4.3, 4.4, 4.5	Tutorial		
		12	More nested loop examples; **Functions**, motivation and example with parameters, and prototypes	4.6,5.1, 5.2	3		
5	4-Feb	13	Functions, sending information to functions (parameters/arguments;) call by value. Variable Scope in functions; Lab 4 discussion	5.3,, 5.6		Lab 4 -Loops and Functions	
		14	Boolean return value, introduction to Pointers;	5.4, 5.6	Tutorial		
		15	More pointers, using to receive info back;	5.7	4		
		16	more on scope; Larger function example - include logic example - Goldbach's conjecture	5.8	Tutorial	Lab 5 - Functions and Arrays	

6	11-Feb	17	Introduction to Arrays - declaration, initialization, simple use;	6.1, 6.2	5	Lab 5 - Functions and Arrays and Debugging (DNA Search)	
		18	Arrays and Pointers; Lab 5 discussion	63			
	18-Feb		**READING WEEK, No Classes, No Tutorials, No Labs**				
7	25-Feb	19	Midterm Review; solve problems; previous midterms	6.4		NO LAB (Thurs-Mon Feb 25) - Midterm Week (Midterm is Tuesday, Feb 26 @ 1-3pm, EX200 & EX320)	**Lab**
		20	Arrays continued, 2D Arrays, Lab 5 Discussion on debugging!	6.3	No Tutorial		
		21	2D Array Example; Multi-Dimensional Arrays, passing Multi-D arrays;	6.3			
8	4-Mar	22	Dynamic memory allocation; size of types, sizeof operator, byte addressing, Arrays & dynamic mem; Lab 6 - Game P1	6.3, 10.2		Lab 6 - Tic Tac Toe	**"Defensive Programming"**
		23	Pointer Arithmetic; Introduction to strings; Strings - example, I/O,	7.2, 7.4	Tutorial		
		24	String functions,	7.3, 7.5	6		
9	11-Mar	25	More String Functions, 2D Arrays - arrays of strings	8.1, 8.2		**No Lab Graded**; work on Lab 7	**Lab 7**
		26	Recursion - factorial, printing patterns with recursion	8.5	Tutorial		
		27	More complex Data Structures - structs - Neuron Example; dynamic allocation of structs	10.1	7		
10	18-Mar	28	Introduction to Linked Lists	8.10, 10.3		Lab 7 - Reversi Game Lab Part 1	**Lab 8**
		29	Operations on Linked Lists	10.4	Tutorial		
		30	More operations on Linked Lists;	10.4	8		
11	25-Mar	31	Linked List reprised; Lab 8	9.1, 9.2		Lab 8 - Reversi Game Lab Part 2	**Lab 9**
		32	Searching;	9.5, 9.4	Tutorial		
		33	Sorting 1 - bubble sort, Selection sort;	9.3, 9.7	9		
12	1-Apr	34	Sorting 2 - Insertion Sort, QuickSort;	9.7		Lab 9 - Linked List & Sorting	**NO SEMINAR**
		35	Sorting 3 - Quicksort actual code;Lab 9, visualizations: http://www.youtube.com/watch?v=ywWBy6J5gz8 http://www.sorting-algorithms.com	10.4	Tutorial		
		36	Binary Trees and Algorithms (Linked List review)	10.7	10		
13	8-Apr	37	Binary Trees and Algorithms	10.7, 10.8	No Tutorial		Review {Bring Your Questions!]
		38	Binary Trees and Algorithms, continued				
		39	Course Review/Exam Discussion				