Advanced C Programming Syllabus

Lesson #1

I.   Advanced scanf( )
    A. Literal Characters in the Conversion String
    B. Formatting the Output
    C. Scan Sets

II.   Line Input with Text to Numeric Conversions
    A. gets( )
    B. atoi( ), atol( ), and atof( )
    C. strchr( ), strrchr( ), and strpbrk( )
    D. strtok( ) (Optional)
    Exercise 1 – Advanced Keyboard Input

III.   Low Level DOS Character I/O
    A. getch( ), getche( ), and kbhit( )

IV.   Time Functions
    A. time( ) and the time_t Type
    B. clock( )

V.   Pseudo-Random Number Generation
    A. rand( ) and srand( )
    Exercise 2 – Miscellaneous Library Functions

Lesson #2

I.   Variable Argument Lists

II.   Pointers and Functions
    A. Review: Passing an Array to a Function
    B. Declaring Function Pointers
    C. Passing Pointers to Functions
    D. Generic Interface (void *)
    E. qsort( )
    Exercise 3 – Seriously Advanced Pointers

III.   Text File Input
    A. FILE Type
    B. fopen( ), fclose( ), and feof( )
    C. fscanf( )
    D. stdin
    E. fgets( )
    F. Removing the New Line
    Exercise 4 – Text (Sequential) File Input

Lesson #3

I.   **Text File Output**
   A. fflush( )
   B. Differences Between gets( ), fgets( ), puts( ), and fputs( )
   C. fprintf( )
   D. Read Mode, Write Mode, and Append Mode
   Exercise 5 – Text (Sequential) File Output

II.   **Command Line Arguments**

III.   **Binary File I/O**
   A. Binary Versus Text Mode
   B. fopen( )
   C. fwrite( )
   D. fread( )
   E. fseek( )
   F. ftell( )
   Exercise 6 – Binary (Random) File I/O

Lesson #4

I.   **Pointers, Storage, and 2-D Arrays**
   A. Arrays of Integer
   B. 2-D Arrays of Integer
   C. Arrays of Characters
   D. Arrays of Strings
   E. Arrays of Character Pointers

II.   **Dynamic Memory Allocation**
   A. malloc( ) and calloc( )
   B. free( )
   Exercise 7 – Dynamic Memory Allocation

III.   **Bit-Level Operators**
   A. Logical and Bit Operator Comparison (Optional)
   B. Set the nth Bit (Optional)
   C. Unset (Zero Out) the nth Bit (Optional)
   D. Read the nth Bit (Optional)
   E. Structure Bit Fields
   Exercise 8 – Bit-Level Operators (Optional)