Advance C Course Content:

Module 1:
1. Linux Basic Commands:
→ system commands, vi editor, networking commands.
2. Number System
→ binary, octal, hexadecimal.
3. Structure of a C Program.
→ shell in linux, elements used in a C program, location of library and header files, environment variables, what is the use of main function and whether it is required.
4. Compilation Stages.

Module 2:
1. Elements of C.
→ delimiters, identifiers, data types, constants, variables, expressions, statements, comments.
2. Data Types And Its Memory Layout.
→ how char, int, flat and double are stored in memory.
3. Input-Output In C.
→ reading input data, writing output data, formatted input and output, character I/O.
4. Operators And Expressions.
→ arithmetic operators(unary, binary), assignment operators, increment and decrement operators, relational operators, logical or boolean operators, conditional operators, comma operator, sizeof operator, type conversion, precedence and associativity of operators, role of parentheses and order of evaluation of opearnds.
5. Control Statements.
→ if..else, nesting of if..else, else if ladder, loops(while, do..while, for, nesting of loops, infinite loops), break and continue statement, goto, switch.
6. Operations on Bits.
→ bitwise(AND, OR, XOR), bitwise left and right shift, masking, bit fields.

Module 3:
1. Basic of Pointers.
→ description about memory, address operator, use of pointer, pointer variables, pointer arithmetic, precedence of dereferencing operator and increment/decrement operator, pointer comparison, pointer to pointer.
2. Functions.
→ advantage of function, library and user-defined functions, function(definition, declaration, call, arguments), return statement, various type of functions, recursion.
3. Arrays.
→ 1-D and 2-D array(declaration initialization processing accessing).
4. Pointers in Details.
→ pointer to 1-D and 2-D array, pointer and functions, function returning pointers, void pointers, DMA(malloc, calloc, realloc, free, dynamic arrays), pointer to functions, callback functions.
5. Strings.
→ string constants and variables, string library functions, string pointers, array of strings, array of pointers to strings, sprintf, sscanf.
6. Memory Organization of a C program.
7. Command Line Argument.

Module 4:

1. Structure And Union.

→ declaring and defining a structure, structure variable(initialization, accessing, assignment), storage of structures in memory, array of structure, array within structure, nested structure, pointer to structure, pointers within structures, structure and functions, self referential structures, unions, typedef.

2. File Handling.

→ text and binary modes, concept of buffer, opening and closing a file, EOF, structure of general file program, character I/O(fputc, fgetc, getc, putc), integer I/O(putw, getw), string I/O(fputs, fgets), formatted I/O(fprintf, fscanf), block read write(fwrite, fread), random access to file(fseek, ftell, rewind), other file functions.

3. The C Preprocessor.

4. Static And Dynamic Libraries.

→ static and dynamic linking, creating static and dynamic library, c program to use user-defined static and dynamic library.

5. Variable Number of Arguments.

6. Storage Class.