KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
*COMPUTER ENGINEERING DEPARTMENT*

ICS 103: Computer Programming in C

**Term 083 Lecture Breakdown**

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| **Lec#** | **Date** | **Topics** | **Ref.** |
| 1 | S 11/7 | No Class. |  |
| 2 | U 12/7 | No Class. |  |
| 3 | M 13/7 | Syllabus. Overview of Computers, Hardware & Software, Computer Hardware Components of a Computer, Memory. | 1.1-1.5, H1 |
| 4 | T 14/7 | Computer Software, Computer Languages, Compiler, Software Development Method, Pseudo code & Flowchart. Overview of C: History & Philosophy, Why C? What’s Missing?  | 1.1-1.5, H1 & 2.1-2.2, H2 |
|  | W 15/7 (Makeup) | General Form of a C program: Preprocessor Directives, Comments, The “main” Function, Variables and Data Types, Executable Statements, Input/Output Operations and Functions, The printf Function, The scanf Function, Assignment Statements, return Statement, Reserved Words, Identifiers, Punctuation and Special Symbols, Formatting Numbers in Program Output (for integers). | 2.1-2.5, H2, H3 |
| 5 | S 18/7 | Formatting Numbers in Program Output for integers & doubles. C Arithmetic Expressions, C Operators, Data Type of an Expression, Mixed-Type Assignment Statement, Type Conversion Through Casts, Expressions with Multiple Operators, Rules for Evaluating Expressions, Writing Mathematical Formulas in C, Programming Style, Bad Programming practices. | 2.3-2.5, H3 & 3.1-3.3, H4 |
| 6 | U 19/7 | Introduction to Functions, Predefined Functions and Code Reuse, Some Mathematical Library Functions, Simple User-defined Functions, Function Prototypes, Function Definition, Placement of Functions in a program, Execution Order of Functions.  | 3.4,3.5, H5 |
| 7 | M 20/7 | Control Structures, Compound Statements, Conditions, Relational and Equality Operators, Logical Operators, Operator Precedence, Character Comparison.  | 4.1-4.5, H6 |
| 8 | T 21/7 | Character Comparison, Logical Assignment. **(Quiz#1)** | 4.1-4.5, H6 |
|  | W 22/7 (Makeup) | Complementing a condition, DeMorgan’s Theorem, ***if*** statement: Two alternatives, One alternative, Nested if Statements, Multiple-Alternative Decision Form, Common if statement errors, Switch statement.  | 4.6-4.7, H6 |
| 9 | S 25/7 | Switch statement, Nested if versus switch, Common Programming Errors. Repetition in Programs, Counting Loops, While Statement, Compound Assignment Operators, For Statement, Increment and Decrement Operators, Prefix and Postfix Increment/Decrement.  | 4.6-4.7, H6 & 5.1-5.5, H7 |
| 10 | U 26/7 | Conditional Loops, Sentinel Controlled Loops, Nested Loops, Do While Loop. | 5.6-5.8, H7 |
| 11 | M 27/7 | Why data files? Steps For Using Data Files, Declaring FILE pointer variables, Opening data files for input/output, Scanning from and printing to data files, Closing input and output files, Handling File not found error, EOF-controlled Loops. | 2.6, H8 |
| 12 | T 28/7 | Types of Functions, void Functions with Input Arguments, Actual Arguments & Formal Parameters, Writing Modular Programs using Functions, Functions with Input Argument and a Single Result. | 6.1, H9 |
|  | W 29/7 | Major Exam I |  |
| 13 | S 1/8 | Re-usability of Functions, Logical Functions, Functions with Multiple Arguments, Function Data Area, Testing Functions Using Drivers, Why do we use Functions? Common Programming Errors. | 6.1, H9 |
| 14 | U 2/8 | Introducing Functions that return multiple results, What is a Pointer variable? Functions returning multiple results, Triple use for Asterisk (\*), Examples of Functions Returning Multiple Results.  | 6.3 , 6.5, H10 |
| 15 | M 3/8 | Examples of Functions Returning Multiple Results. Introducing Recursive Functions, Format of recursive Functions, Recursive Factorial, Tracing Recursive Functions, Recursive Multiplication, Recursive Power Function. | 6.6, H11 |
| 16 | T 4/8 | Recursive Fibonacci Function, Tracing using Recursive Tree. What is an Array? Declaring Arrays, Array Initialization, Array Subscripts, Accessing Array Elements, Array Examples. | 6.6, H11 & 7.1-7.3, H12 |
| 17 | S 8/8 | Review on Arrays, Using array elements as function arguments. **(Quiz#2)** | 7.4, H13 |
| 18 | U 9/8 | Using array elements as function arguments: Examples. Using arrays as function arguments: Examples. | 7.4, H13 |
| 19 | M 10/8 | Returning an array result: Examples, Partially filled Arrays.  | 7.4, H13 |
| 20 | T 11/8 | No Class. |  |
|  | W 12/8 (Makeup) | Partially filled Arrays. Introduction to Searching, Linear Search Algorithm, Binary Search Algorithm, Binary Search Implementation, Introduction to Sorting. | 7.5, H14 |
| 21 | S 15/8 | Selection Sort Algorithm, Selection Sort Implementation, Bubble Sort Algorithm, Bubble Sort Implementation. | 7.5, H14 |
| 22 | U 16/8 | What is a String? Input/Output with printf and scanf, Input/Output with gets and puts, Input/Output with fgets and fputs, String Copy (strcpy). | 7.6, H15 |
| 23 | M 17/8 | String Length (strlen), String Comparison (strcmp), String Concatenation (strcat), String Tokenization (strtok), Searching a string (strchr and strstr), Character Related functions. | 7.6, H15 |
| 24 | T 18/8 | Character Related functions. **(Quiz#3)** | 7.6, H15 |
|  | W 19/8  | Major Exam II |  |
| 25 | S 22/8 | Major Exam II Solution. |  |
| 26 | U 23/8 | Introduction to 2-D Arrays, Declaration of 2-D Arrays, Accessing 2-D Array elements, Initialization of 2-D Arrays, Processing 2-D Arrays, 2-D Arrays as parameters to functions. | 8.1, H16 |
| 27 | M 24/8 | Array of Strings, Input/Output with Arrays of Strings, Use of *break* in loops, Use of *continue* in Loops. | 8.2,8.3, H17 |
| 28 | T 25/8 | **(Quiz#4)** |  |
| 29 | S 29/8 | Review (Solving Previous Exams). |  |
| 30 | U 30/8 | Review (Solving Previous Exams). |  |