# University of Asia Pacific
## Department of CSE

### Lesson Plan

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| **Course Code** | CSE 101 |
| **Course Title:** | Introduction to Computer Science & Programming Methodology |
| **Semester** | Spring 2017 |
| **Teacher** | Dr. Md. Rashedul Islam |
| **Office/Room** | Level 7, Dept. of CSE |
| **Email** | **rashed.cse@gmail.com** |
| **Contact** | **+88 01712 501772** |

**Course outline:**

Introduction to computer science, what is computer, Fundamental parts of a computer, storage and memory management (RAM, ROM, Hard disk) system overview of a computer, I/O devices, software and hardware, basic knowledge of computer, Files and folders, Command prompt, Microsoft office, Shortcut command keys, web ideas, **Number System:** Binary, Decimal, Octal, Hexadecimal number system and their conversion. Introduction to structured programming, **Flowchart:** what is flowchart, expressions of flowchart, importance of flow chart. **Pseudo code:** pseudo code and expression of pseudo code. **Algorithm:** Algorithm writing, relationship among algorithm, pseudo code and flow chart, code to flowchart and vice versa conversion. Introduction to C program, Skeleton of C program, **Compiler:** overview of compiler, importance and functionality, output standard library function as printf(), input standard library function as scanf(), **Data types and Variable:** different data types, variable types and their sizes, conversion among them, **scope:** global variable, local variable, static variable, auto variable . **Operators:** Types of operator in C, functionality of operators, increment – decrement operators, precedence of operators. Header files, library files, object files and their importance. **Conditional Operators:** if-else structure, switch-case structure, selection structure, statement and expression. **Control Flow:** for loop structure, while loop structure, do-while structure, sum of the series, co-ordinate geometry, design pattern using loop. **Debugging**: debug a sample program

using compiler. **Function:** argument and parameter of a function, return types, inline declaration, forward declaration of a function. **Macro:** types of macro, sample macro program, macro as preprocessor, difference between macro and function, advantages and disadvantages of macro. **Bitwise operator:** introduction to bitwise operators, their functionality and truth table of basic and, or, xor, nor algebraic functions**. Arrays:** introduction to array, declaration and definition of an array, types of array, multidimensional array, size calculation of different types of array, scanning array, programs using array, matrix multiplication using array, insertion, deletion, replacement, search from an array, advantages of array over variable. Scientific calculator using C program.

**Teaching method:** Lectures, assignments, interactive sessions.

**Prerequisites:** **N/A**

## Course / Class schedule

| Lecture No.: | Topics | |
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| Lec # 1,2 | 1) Introduction of Computer and Computer Science<br>2) Motivation of study of Computer Science and engineering<br>3) What is Computer? Advantages and applications<br>4) Basic Structure of computer.<br>5) SOFTWARE, HARDWARE, System software, Application software Operating System (OS) | Introduction to Computer Science Engineering |
| Lec # 3 | 6) Fundamental parts of a computer hardware<br>7) Introduction to CPU,CU,ALU ?<br>8) Introduction to computer memory (Internal and external).<br>9) I INPUT/OUTPUT devices of a computer | Basic computer architecture |
| Lec # 4 | 1) Different types of number system.<br>2) Conversions between different number system. | Number System |
| Lec # 5, 6 | 1) What is algorithm?<br>2) How to write an algorithm?<br>3) Some examples of flow chart and algorithm .<br>4) What is flowchart? Advantages and expressions of a flowchart?<br>5) pseudo code | Flow chart, Algorithm, and pseudo code |
| | **Class Test 1** | |
| Lec # 7 | 1) What is C?<br>2) High level and low level languages<br>3) Smallest C program that can be compiles without error or warning?<br>4) What is the skeleton of a C program, header file, library file, preprocess, body of the program?<br>5) What is compiler, advantages of compiler?<br>6) What are the steps of compiling a simple program? | Introduction to C program |
| Lec # 8,9 | 1) What are the basic data types?<br>2) Type conversion, data loss, data loss problem solve technique?<br>3) Data size, different operators, precedence?<br>4) Declaration and definition of a variable?<br>5) Add, sub, div, multiplication, modulus operations and basic questions of them? Integer division, floating modulus. | Data types and operators |
| Lec # 10 | 1) Printf() function and its properties.<br>2) Scanf() function and its properties. | Input & Output function |
| Lec # 11, 12, 13 | 1) Basic structure of if-else, switch-case condition.<br>2) Basic program using if-else, switch-case. | Conditional |

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| | 3) Nested if-else and nested switch-case.<br>4) What are the differences between statements and expressions explain with examples? | statement |
| | **Class Test 2** | |
| Lec # 14 | Review class | |
| | **Mid-Term Examination** | |
| Lec # 15, 16, 17 | 1) Basic structure of for loop, while loop and do-while loop.<br>2) What is the difference between for loop and do-while loop explain with example?<br>3) Practice different sum of the series.<br>4) Practice different design patterns. | Control Flow |
| Lec # 18, 19 | 1) Bitwise operations.<br>2) And, or, xor, negate operational truth table. | Bitwise operations |
| Lec # 20, 21,22 | 1) What is array? Declaration and definition of an array.<br>2) Advantages of array over variable?<br>3) Lower bound, upper bound of an array.<br>4) Size of an array.<br>5) Multidimensional array, their declarations, definitions and size calculation.<br>6) Matrix representation of 2D or 3D array. | Arrays |
| | **Class Test 3** | |
| Lec # 23 | 1) What is string?<br>2) What are the relation between string and array?<br>3) String basic operations. | String |
| Lec # 24, 25 | 1) Basic structure of a function.<br>2) What are the difference between parameter and argument of a function.<br>3) Inline and forward declaration of a function, example.<br>4) Functions return type. | Functions |
| Lec # 26 | 1) What is structure?<br>2) What are the differences between structure and union?<br>3) How to calculate the size of structure and union?<br>4) How to declare a structure and access a structure element?<br>5) What are the advantages of using structure over array and variable explain with example? | Structure, union |

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| Lec # 27 | 1) What is macro?<br>2) How to define a macro?<br>3) Advantages and disadvantages of a macro?<br>4) Differences between macro and function? | Macro |
| | **Class Test 4** | |
| Lec # 28 | Review Class | |
| | **Final Examination** | |

**Basic text(s):** Teach yourself C by Herbert Schildt.
Publisher: Osborne McGraw-Hill

**Reference text(s):** The Complete Reference
by Herbert Schildt.

Programming in ANSI C
by E Balagurusamy

**Additional reading material:**
Online resources will be provided during lecture or distributed by internet media

**Assessment methods:**

| Component | Weight/percentage |
|---|---|
| Quizzes | 30% |
| Class participation | |
| Assignments | |
| Term Paper | |
| Presentation | |
| Midterm | 20% |
| Final | 50% |
| Total | 100% |

**Grading system:** **AS per UAP**