AN-NAJAH NATIONAL UNIVERSITY

Faculty of Engineering and Information Technology

Programming Principles & Problem Solving

**(**10681101**)**

Course Syllabus

***Weekly detail***

*\*\*\*\*\*(T)for theoretical, (InP) for inclass practise, (P) for out class practise*

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| --- | --- | --- | --- | --- |
| *Week* | *Type* | *UNIT* | *Face-To-Face* | *SELF STUDY* |
| *1* | *T* | Introduction   * What is programming? * What is a computer? * What is a program? * Operating environment | *1* |  |
|  |  |  |  |  |
|  | *T* | * problem-solving strategies   The role of algorithms  FlowChart Examples | *2* |  |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | *InP* | In-Class Work: Our first C++ program |  | *2* | |  |  |  |  |
| *2* | *InP*  *P (Lab1)* | How to write/ debug our first C++ program  cout operator examples  string literal escape sequences \t \n  Comments  Write a C++ Program to Print Rectangle Star Pattern | *3*  *1* |  |
| *3* | *T*  *InP* | Types, variables (int , float )  Examples: rectangle area calculation, average of 3 numbers –  type casting – cin>> operator  Assignment statement and expressions **(**operator precedence**)** | *1*  *1*  *1* |  |
|  | *P* | Lab Exercise:   1. Write a program to determine how many years the user has before he or she retires. 2. Temperature conversions. 3. Write a program to determine how much fence is needed to surround a rectangular field. |  |  |
| *4* | *T* | Sequential execution and program errors  Types of Errors:   * Compile time error * Run-time error   InClass Work:  Explain a code with a semantic error/ a run time error*/* a logical error  **Assignment1: Take a program with bugs in it, and fix them.**  Conditional execution  Nested Conditional statement | *1*  *2* |  |
|  | *P*  *Milestone 1* | Lab Exercise:   1. Take a given program that has syntactic/semantic errors in it, and get it working. 2. Write a program to report the degree category of a given mark.   **MiniProject: Simple Calculator** |  |  |
| *5* | *T* | compound statement  **tertiary operator:** conditional operator.  **switch** | *3* |  |
|  | *P* | Write a program to report the pass or fail status of an exam candidate, giving a message of distinction if appropriate using an if statement. |  |  |
| *6* | *InP* | Repeated execution –while statement  Scope, lifetime  Minimum tank size  Example: Average of a list of numbers | *3* |  |
|  | *P*  *Milestone 2* | Lab Exercise:   1. Power xY 2. Single times table   **MiniProject1-continue: Modified Simple Calculator (Go through the previous simple calculator project to see where shorthand operators could have been used.)** |  |  |
| *7* | *T* | For loop , do while  Control statements nested in loops  Nested Loop  In-Class Work: series | *3* |  |
|  | *P* | Solving series : 2^1 + 2^3 + 2^5  Calculus exercise |  |  |
| *8* | *InP* | built-in function – math  First exam  Consolidation of concepts so far : long double char | *1*  *1*  *1* |  |
|  | *P* | Lab Exercise: Multiple times table |  |  |
| *9* | *T* | **User-defined function**  **Parameter passing** | *3* |  |
|  | *P*  *Milestone 3* | **Lab : Computing slope of a straight line.**  **MiniProject-continue: Scientific Calculator** |  |  |
| *10* | *P* | Text file FILE\*  **InClass Work:** | *3* |  |
|  | *P* | **Lab exercise: Calculus exercise** |  |  |
| *11* | *T* | Array  Array of char = string  **InClass Work:** | *3* |  |
|  | *P* | **Lab exercise: Calculus exercise** |  |  |
| *12* | *T* | Arrays and Methods (pass by sharing (reference ))  **InClass Work:** | *3* |  |
| *13,14* | *T* | Matrices  Matrices of char  Matrices and method | *3* |  |
|  | *P* | **Lab exercise: Calculus exercise** |  |  |
| *15* | *T* | Function overloading | *3* |  |
|  |  |  |  |  |