**CS1002 – Programming Fundamentals**

1. **Course Description**

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| **Course Code** | CS-1002 |
| **Course Title** | Programming Fundamentals |
| **Credit Hours** | 3+1 |
| **Prerequisites by Course(s) and Topics** | None |
| **Assessment Instruments with Weights** (homework, quizzes, midterms, final, programming assignments, lab work, etc.) | Quizzes: 10  Assignment: 15  Mid-1:15  Mid-2:15  Final:45 |
| **Course Coordinator** | Tahir Farooq |
| **URL (if any)** |  |
| **Current Catalog Description** |  |
| **Textbook** (or **Laboratory Manual** for Laboratory Courses) | * C++ How to Program by Deitel & Deitel, Prentice Hall 8th Edition   C++ Programming: From Problem Analysis to Program Design by D.S.Malik |
| **Reference Material** | * Computer Science Illuminated by Nell Dale, John Lewis, Jones and Bartlett, Latest Edition * Just Enough Programming Logic and Design by Joye Farrell. |

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| **Course Goals** | 1. Getting students acquainted with problem understanding, modeling 2. Understanding the concept of Programming Languages. 3. Two major areas to be covered:    * 1. Computation and problem solving      2. Implementation in C++ language. 4. Design and implement algorithms to solve real world problems. | | | |
| **Topics Covered in the Course, with Number of Lectures on Each Topic** (assume 15-week instruction and one & half-hour lectures) | |  |  | | --- | --- | | **Week wise distribution** | **Topics Covered** | | **Week 1** | Problem Analysis with modeled problems using flow charts, pseudo code with generic variable, if else, & nested if-else | | **Week 2** | Problem Analysis with modeled problems using flow charts, pseudo code with generic variable | | **Week 3** | Problem Analysis with modeled problems using flow charts, pseudo code with generic variable, if-else, nested if-else, & generic loop (while) | | **Week 4** | Problem Analysis with unmodeled problems using algorithms, flow charts, pseudo code with generic variable, if-else, nested if-else (multiple logical operations) | | **Week 5** | Problem Analysis with unmodeled problems using algorithms, flow charts, pseudo code with generic variable, if-else, nested if-else (multiple logical operations), loop (while) | | **Week 6** | Mid1 | | **Week 7** | Basics of C++ and memory concepts, Concepts of different data types, variable | | **Week 8** | Basic mapping of C++, Input output  Control structures: if-else, nested-switch case | | **Week 9** | Loops: for, while/do-while and one dimensional array (1D) | | **Week 10** | Nested Loops with two dimensional array (2D) | | **Week 11** | Mid2 | | **Week 12** | Introduction to Functions + strings | | **Week 13** | Functions + Character- strings | | **Week 14** | Recursive Searching and sorting Algorithms | | **Week 15** | File Processing (Binary and Text files) (sequential) | | **Week 16** | Revision/Project evaluations | | | | |
| **Laboratory Projects/Experiments Done in the Course** | There will be weekly labs starting from the first week.  The following is a summary of the Lab exercises given to Students.   * Introduction to Pseudo code, Algorithm and Flowchart and Programming Fundamentals. * Introduction to Conditional Statement in C++ * Control Structure (Repetition) * Functions and Recursion. * Arrays (1D, 2D, 3D) * String sorting and searching algorithms. * Pointers * Dynamic memory allocation * Filing in C++ | | | |
| **Programming Assignments Done in the Course** | Assignment related to Functions, Arrays, Pointers, Structures, Dynamic Memory and File Processing will be done | | | |
| **Class Time Spent on** (in credit hours) | **Theory** | **Problem Analysis** | **Solution Design** | **Social and Ethical Issues** |
| 15% | 50% | 30% | 5% |
| **Oral and Written Communications** | Every student is required to submit at least \_1\_ written reports of typically \_2\_ pages and to make \_1\_ oral presentations of typically \_10\_ minute’s duration. Include only material that is graded for grammar, spelling, style, and so forth, as well as for technical content, completeness, and accuracy. | | | |
| **Academic Integrity**  Zero tolerance on cheating as per NUCES Policies. All Cases (in any Assessment Instruments) will be referred to department committee. | Plagiarism is strictly prohibited and would be strictly dealt with. Late submission of assignment will be allowed until its solution is discussed. It is better to partially attempt what you understand and submit remaining as late, than to copy from someone else or internet.  - Max Grade penalty of 50% (in assignment) for late submit.  - Min Grade penalty of 100% (in course) for plagiarism.  **When taking help in your assignments (from web)**  - Cite reference clearly, mentioning URL and content taken.  - Even if referred, it is still plagiarism to use the same sentence or change it in active/passive form. Use your own words, ALWAYS!.  **When taking help in your assignments (from peers)**  - Discussing assignments with peers is allowed only on discussion group. Do not provide excuses later.  - Provide help in form of explaining problem rather than explaining solution. Group discussion is encouraged. | | | |
| **Evaluation Policy**  For NUCES Policies please read the student handbook. | - Attendance and Quizzes will might be held in start of class.  - Exams may be open book (closed notes). Please do NOT write or mark anything on the book.  - There will be NO compensation for missed quiz.  - All graded evaluations will be property of the instructor.  - Take classes only with your section, assigned by NU CS dept.  **- IMPORTANT**: Always send me same day EMAIL reminder if I give you any verbal comment e.g class participation bonus, late submission allowed, leave allowed, average marks etc. | | | |