**Pakistan Air Force – Karachi Institute of Economics & Technology**

**College of Computing & Information Sciences (CoCIS)**

**Programming Fundamentals**

Spring 17

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| Instructor | **Urwah Lodhi** |
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| Office Location |  |
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| Telephone |  |
| Teaching Assistants (TA) |  |
| TA(s) Office Hours |  |
| Course URL (if any) |  |

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| **Course Basics** | | |
| Course ID(s) |  | |
| Credit Hours | 3 | |
| Lecture(s) | # of sessions / week: 02 | Duration: 75 minutes / session |
| Lab(s) | # of sessions / week: 02 | Duration: 75 minutes / session |
| Pre-Requisites | None | |

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| **Course distribution** | |
| Theoretical Studies | 60.00% |
| Practical Studies | 40.00% |

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| **Course description** |
| This course teaches computer programming using a mix of on-paper and on-computer exercises. It focuses on procedural-cum-structured programming using C#. The course goes through the main concepts like: syntax/semantics, compiler, algorithms, basic language elements, data types, variables, expressions, control structures, strings, arrays, multi-dimensional arrays and methods using C#. Students will gain hands-on experience through several programming assignments. |

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| **Grading breakup and policy** | | | |
|  | Frequency | Score (for single stuff) | Total |
| Mid Term Exam | 01 | 25 | 25 |
| Quizzes (Best five) | 7-8 | 05 | 05 |
| Assignments (Best five) | 6-7 | 05 | 05 |
| Lab Test | 01 | 5 | 05 |
| Final Test | 01 | 40 | 40 |
| Project | 01 | 20 | 20 |
| Total | | | 100 |

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| **Course overview** | | | | | |
| **Week** | **Session** | **Topics to be covered** | **Session Date** | **Covered (Y/N)** | **Signature** |
| 1 | 1 | * Introduction to course * Software Development Life Cycle * Types of Programming Languages |  |  |  |
| 2 | * Hurdles in programming. * Enjoyments of programming. * Why to be good at Programming? * How to be good at Programming? |  |  |  |
| 2 | 1 | * Flow Charts * Algorithms * Pseudo Codes |  |  |  |
| 2 | * Data Types and Variables * Conversions & Type Casting |  |  |  |
| 3 | 1 | * Expressions * Input / Output Statements |  |  |  |
| 2 | * Arithmetic Operators * Relational Operators |  |  |  |
| 4 | 1 | * Control Statements: if / else / else if |  |  |  |
| 2 | * Logic building with Control statements. |  |  |  |
| 5 | 1 | * Control Statements: Switch casing |  |  |  |
| 2 | * Logic building with switches |
| 6 | 1 | * Repetition Structure (Incremental Loop):   + For |  |  |  |
| 2 | * Repetition Structure (Conditional Loop):   + While   + Do While |  |  |  |
| 7 | 1 | * Nested Loops |  |  |  |
| 2 | * Logic building using loops |  |  |  |
| 8 | 1 | * Scope of variables * Introduction to Arrays (single dimensional arrays) |  |  |  |
| 2 | * Logic Building with Arrays |  |  |  |
| 9 | 1 | * Multi-Dimensional Arrays |  |  |  |
| 2 | * Logic Building with Multi-Dimensional Array |  |  |  |
| 10 | 1 | * For-Each loop & Logic Building |  |  |  |
| 2 | * Project Discussion/ Review – Phase I |  |  |  |
| 11 | 1 | * Introduction to Methods   + Built-in methods for string manipulation |  |  |  |
| 2 | * User defined methods |  |  |  |
| 12 | 1 | * More on methods & Logic Building |  |  |  |
| 2 | * Recursion & Review of Topic covered |  |  |  |
| 13 | 1 | * Review of Topic covered & Logic Building |  |  |  |
| 2 | * Practice Questions & Logic Building |  |  |  |
| 14 | 1 | * Practice Questions & Logic Building |  |  |  |
| 2 | * Practice Questions & Logic Building |  |  |  |
| 15 | 1 | * Project Submission / Presentation / Viva |  |  |  |
| 2 | * Project Submission / Presentation / Viva |  |  |  |

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| **Text books** |
| **Introduction to Object Oriented Programming** Author: Joyce Farrell Edition: 4th  **The Complete Reference C# 4.0** Author: Herbert Schildt |

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| **reference books** |
| **C# Essentials** Author: Ben Albahari, Peter Drayton & Brad Merrill Edition: 2nd Publisher: O’Reilly Media  **Head First C#** Author: Andrew Stellman & Jenifer Greene Publisher: O'Reilly  **Object Oriented Programming in C++** Author: Robert Lafore  Edition: 4th  Publisher: The Waite Group |