Course Title**: OBJECT ORIENTED PROGRAMMING**

Course Code**: CSC-210**

Prerequisite: **Computer Programming**

Credit Hours**: 3+1**

Course**:** **BSE**

Section**:** **A, B and C**

Instructor**:** **Engr**. **Mahawish**

Email**:** **mahwishfatima.bukc@bahria.edu.pk**

**Course Objectives & Description:**

The course is designed to familiarize students with objects and classes. Design and implementation focuses on object oriented programming paradigm. Real World Problems are solved using alternatives provided in OOP, differentiating between procedural and OOP Programming, properties of object oriented programming, Data Abstraction, Encapsulation, Method overloading, Inheritance, Method overriding, Constructors, Generalization and Specialization, Association, Aggregation and Composition, Polymorphism, Static members, Abstract classes, Interfaces.

**Course Learning Outcomes (CLOs):**

|  |  |  |  |
| --- | --- | --- | --- |
| **S #** | **CLO** | **Taxonomy Level** | **PLO #** |
| **1** | Describe the fundamental concepts of Object-Oriented Programming for example Constructors, Destructors, Encapsulation, this pointer, Inheritance, Aggregation, Composition etc. | **C1** | 1 |
| **2** | Explain and compare some of the advanced OOP concepts like subtyping, specialization, Multilevel and Hierarchical inheritance, native, final modifiers, static and dynamic binding etc. | **C2** | 1 |
| **3** | Apply OOP programming concepts for problem solving. | **C3** | 3 |
| **4** | Present an advanced programming topic confidently and professionally | **A2** | 9 |

**Lesson Plan**

|  |  |  |  |
| --- | --- | --- | --- |
| **Week** | **Starting Date** | **Tentative course plan** | |
| 1 | 20th Feb - 24th Feb | Course Introduction  • Object Oriented Approach  • Object Oriented Life Cycle  • Object Oriented Analysis  • Object Oriented Design  • Object Oriented Programming | |
| 2 | 27th Feb – 3rd Mar | * Data Members & Declaration * Member Functions & Invocation * Reference types & Primitive types * ACCESSOR FUNCTIONS * MESSAGE * EVENT * OBJECT & CLASSES | |
| 3 | 6th Mar - 10th Mar | * Introduction to Java * Programming Languages & Types * Compiling Java Source Code * Popular programming paradigms * Java, web, and beyond * Characteristics of java | |
| 4 | 13th Mar – 17th Mar | Quiz#1 | |
| * Jdk editions * Java ide tools reading input in java using scanner class * Java programming constructs | |
| 5 | 20th Mar – 24thMar | Object orientation  Data abstraction  • Method overloading  • constructors  • types of constructors  • destructors  • garbage collection in java  • information hiding  • encapsulation  • object & interface | |
| 6 | 27thMar – 31st Mar | Separation of interface & implementation modifiers in java  Access modifiers in c++, java  THIS Pointer,  Nested classes | |
| 7 | 3rd Apr – 7thApr | Inheritance  Generalization  Specialization | |
| 8 | 10thApr – 14thApr | Subtyping  method overriding | |
| **9** | **17thApr – 21stApr** | Mid Exam |
| 10 | 1st May – 5th May | Generalization & abstract classes  Concrete classes  Multiple inheritance using c++ | |
| 11 | 7th May – 11th May | Associations types of association  Composition  Aggregation | |
| 12 | 14th May – 18th May | Single Inheritance  Multiple Inheritance  Multilevel Inheritance  Hierarchical Inheritance | |
| 13 | 22nd May – 26th May | Object Serialization in Java | |
| 14 | 29th May – 2nd Jun | Polymorphism concepts using c# & c++ | |
| 15 | 5th Jun – 9th Jun | Abstract classes & interfaces | |
| 16 | 12th Jun – 16th Jun | Exception handling | |
| 17 | 19th Jun – 23rd Jun  **26th Jun – 30th Jun** | Revision  Final Exam | |

***NOTE:***

1. *This schedule is subject to revisions as conditions may warrant.*
2. *Topics will be covered in sequence no matter if city observes any planned or unplanned holidays.*
3. *The information in this course outline is subject to revision as conditions may warrant.*

**Method of Instruction:**

Methods of instruction may include, but are not limited to, the following:

1. Classroom lectures by the instructor
2. Presentations by the students (*max.* *two students in a group*)
3. Seminar by the guest speaker
4. Assignments

**Group Work and its Acceptable Rules:**

1. Whole class will be divided into groups of two members of your choice and each group will be assigned a **PROJECT** to work on.
2. Upon completion of the project each group member will honestly evaluate the participation and contribution of other member within the same group.
3. There will be no such thing like group score. Every member of the group will be assessed individually, that is, within the same group every member may attain a **DIFFERENT SCORE** based on his/her work.

**Academic Honesty:**

1. Each student in the class is expected to develop his/her assignment alone. **COLLUSION** occurs where a student knowingly submits as entirely his/her own work done in collaboration with another person; or collaborates with another student in the completion of work which (s)he knows is intended to be submitted as that other student's own unaided work; or knowingly permits another student to copy all or part of his or her own work and to submit it as that student's own unaided work.
2. Do not share assignment, or assignment parts, with your classmates.
3. No to **plagiarism**. Do not copy & paste online material, consult study materials from reliable sources and reproduce them in your own words. **PLAGIARISM** is the deliberate and unacknowledged insertion into a student's work of material taken from the work, published or unpublished, of another.
4. Assignments are thoroughly checked for similarities upon the submission.
5. Violators of this policy will be held responsible for academic dishonesty, and will bear consequences in accordance to the rules and regulations of Bahria University.

**Submitting Your Assignment**

In order to be graded, you must adhere to the following:

1. All assignments must be **HAND WRITTEN or typed** depending on the type of assignment.
2. Only use assignment **template** provided to you for your assignments.
3. Use only **BLUE** ink pen/pointer for hand written assignments. This is to discourage submission of powder photo copy of someone else’s work.
4. Non compliance will result in a score of zero marks.

**Late and Missed Submissions**

1. Late assignments will not be accepted for any reason whatsoever.

**Academic Integrity**

1. Students are expected to promote honesty, trust, fairness, respect and responsibility.
2. In case of any dispute over scores or grades student may file a formal appeal to the head of the concerned department or examination department as per Bahria University reassessment/rechecking/scrutiny policy.

**Attendance Policy**

1. Punctuality and regularity shows your commitment and dedication.
2. Attendance is online, once entered into the system, cannot be changed later on even by the course teacher.
3. Please consult **STUDENT HANDBOOK** for allowed number of absences.

**Method of Evaluation & Structure:**

A student’s grade will be based on multiple measures of performance as mentioned below:

|  |  |
| --- | --- |
| Evaluation Instruments | Marks |
| Quizzes | 10 |
| Total Assignments | 20 |
| **Mid Term Examination** | 20 |
| **Final Examination** | 50 |
| Total: | 100 |

***NOTE****: Any change in this scheme/format will be communicated well in time.*

***NOTE*:** *The minimum consequence for submitting a plagiarized (copied) or falsified assignment, test, report, project, or any evaluated material will award zero marks on that material.*

**Counseling Hours:**

1. Students are encouraged to approach subject teacher beyond class hours to discuss academic or subject related problems.
2. Arrange and confirm an appointment through email at: [mahwishfatima.bukc@bahria.edu.pk](mailto:mahwishfatima.bukc@bahria.edu.pk) for an available time slot.
3. Ensure your presence in your allocated time slot.

**Students with Special Physical or Educational Needs/Challenges:**

1. Students with special physical and/or academic needs/challenges are entitled for extra attention and time beyond class timings.
2. Such students are advised to inform this situation to their subject teacher (that’s me in this course and other faculty members in other courses) at/before the beginning of the course either through an Email or personally for additional & convenient time slots beyond class hours.
3. Special arrangement may also be made available after receiving requests based on specific needs/challenges.

***NOTE*:** *The information in this course outline/lesson plan is subject to revision as conditions may warrant.*

***Text Book***

* Silberschatz, Henry F . Korth, S. Sudarshan..The Fundamental Concepts of Object-Oriented Programming (6th Edition) .McGraw-Hill

***Reference Book***

* Andrew Troelsen and Philip Japikse.C# 6.0 and the .NET 4.6 Framework (7th Edition).Apress
* Simon Kendal .Object-Oriented Programming using C#. (2nd Edition). Bookbon
* Clark and Dan..Beginning C# Object-Oriented Programming (1st Edition).Apress

***Mapping of CLOs to Course Evaluation Instruments (EI)***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| EI | CLO’s | | | |
| CLO 1 | CLO 2 | CLO 3 | CLO 4 |
| Assignments |  |  |  |  |
| Quizzes |  |  |  |  |
| Lab Quiz |  |  |  |  |
| Projects |  |  |  |  |
| Midterm Exam |  |  |  |  |
| Final Exam |  |  |  |  |
| Lab Exam |  |  |  |  |