CS 391
Object Oriented Programming
Tuesday, Thursday 2:00 – 3:50PM
Room 2E03B

Dr. D'Alotto
Office: 2C07
Office Hours: T,Th 5:00 - 5:50pm and by appointment
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Required Text: Weisfeld, M., The Object-Oriented Thought Process, 4th ed., Pearson, 2013.

Bulletin Description: Introduction to object-oriented programming. Concepts of constructor, destructor, inheritance and polymorphism. Use of Object linking and embedding (OLE). Use of Dynamic Link Library (DLL). Pre-requisite: CS 291

Goals and Objectives: Students should be able to understand object-oriented computing and programming concepts; understand construction of classes and the instance of a class; understand object-oriented design and the Unified Modeling Language (UML); understand the concept of data hiding and inheritance; understand the concept of polymorphism and its implementation; write functioning programs in the C++ programming language that implement these concepts.

Course Outline:
1) Introduction to Object-Oriented Programming (OOP) (Weeks 1 - 2)
- -Why OOP?
- -Concepts of Object-Oriented Design
- -Procedural Verses Object-Oriented Programming
- -Benefits and Drawbacks
- -Implementing Classes
- -Encapsulation and Data Hiding
- -Constructors
- -Static Members of a Class
- -Multiple classes
- -Lists and implementations
  - -Array implementation
  - -Linked List Implementation

2) Describing Object-Oriented Systems (Weeks 3 - 4)
- -Unified Modeling Language (UML)
- -Class diagrams
- -Case diagrams
- -Sequence diagrams

-Implementing a class
    -public and private members of a class
    -Examples and Computer Project
    -Exam I

3) Relationship among classes (Weeks 5 - 8)
-Association
-Inheritance
    -Examples and implementation
-Polymorphism
    -Examples and Implementation
        -Examples to compute areas of mathematical shapes

4) Design Patterns (partial solutions to common problems)
-Iterator patterns
-Singleton patterns
-Adapter patterns

5) Analyzing a System
-Gathering Requirements
-Case Study
-Functional Requirements Specifications
    -case analysis

6) Operator Overloading (Weeks 9 - 11)
-Basic Operator Overloading
-friend functions
-An Application - A Complex number class
    -Computer Project
    -Exam II

5) Applications and a final programming project (Weeks 12 - 14)
-Computer Project

Grading: This is a programming course, hence you will be expected to write logical and concise programs in the C++ programming language. Each programming assignment will count towards your final grade and is to be submitted with the following:

1. A complete (printed) listing of the program
2. A written description of the program (Input requirements, how the program works, meaning of the output, etc.) and including class, case, and/or sequence diagrams
3. Printed test runs (these can be cut and pasted into a word processor or text editor) **along with** an explanation of why you chose those particular values to test your program (i.e. What part of the program were you testing? or What were you testing?)

Course grades will be computed as follows:

- 2 in class exams: 40%
- Programming assignments: 30%
- Final exam: 30%

Attendance and Exams: Attendance is essential for good performance in this course and you are expected to attend every class. Please be advised that more than TWO unexcused absences and/ or recurrent tardiness will most likely result in a lower final grade. Also, there are **No** make-up exams. If you miss an exam the final will count more. Please also note, if you miss class you are responsible for all material covered during the class that you missed.

BlackBoard: All course material (including assignments due) will be placed on BlackBoard and you are Responsible to know all course material that is placed on BlackBoard. Lectures and other material will be placed under **Course Documents** while assignments and projects will be placed under **Assignments**.

Cell Phones: Please silent all cell phones during class and ESPECIALLY during an Exam. If you must make or receive a call, you may leave class or wait for the break.

Incomplete Grades: An incomplete grade (INC) will only be given in extreme special cases. You should have communicated the situation that is preventing you from completing the coursework with your professor. Simply falling behind your work is **Not** a valid reason for an incomplete grade. Please note: the final day for withdrawing without receiving a W grade is **September 14th** and the final day for withdrawing with a W grade is **November 10th**. You may view the entire academic calendar on the York College website: www.york.cuny.edu/registrar/calendar

Academic Integrity: Your work must be your own. Cheating on a test, project, or any other form of evaluation will result in a ZERO on that test or evaluation, a possible **F** in the course, and possible further sanctions. Please familiarize yourself with the "Academic Integrity Policy and Procedures" found on the York College website: www.york.cuny.edu and click on Academics then Academic Integrity.

Special Requirements: Any student requiring special attention or special needs is invited to self identify themselves to me so proper arrangements can be made.

Note: This syllabus is subject to change. Any changes made to this syllabus will be informed during class and you are responsible for making note of the updates (if and when changes are made).