CS2810: OOAIA

Jan-May 2018
'P' Slot (Mon 14:00 – 16:40) in CS26 + DCF
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TA(s): *TBA*

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Course related communication will be on Moodle. Information is on the `http://www.cse.iitm.ac.in/~rupesh/teaching/ooaia/jan18/`.

1 Course objectives

Learning the fundamentals of object-oriented concepts and programming. Implementing algorithms and data structures using object-oriented concepts to solve problems.

2 Learning Outcomes

- to analyze a given problem and model it using objects
- to use existing algorithms and develop methods to solve the problem

3 Course prerequisite(s)

CS1200, CS2700, CS2710, MA2130

4 Mode of Learning

Each lab's initial lecture hour would be in understanding various OO concepts in class. Following two lecture hours would be in implementing those concepts and solving the assignments. The assignment would be take-home with a deadline of end of the next day.

5 Textbooks

- Introduction to Algorithms, by Cormen, Leiserson, Rivest, and Stein, MIT Press, Third Edition, 2009.

6 Reference Books

Material from the following books and research papers will be used as necessary.

- Data Structures and Algorithm Analysis in C++ Hardcover, by Mark A. Weiss, Jun 2013, Publisher: PHI; 4 edition, ISBN-10: 013284737X ISBN-13: 978-0132847377.
- Algorithms in C++ : Fundamentals, Data Structures, Sorting, Searching, Parts 1-4, 3rd Edition (Paperback), Pearson India, ISBN-10 8131713059, 2009, ISBN-13 9788131713051.

7 Attendance Requirements

Standard institute rules apply.

8 Planned Syllabus

- Object Oriented Programming – Objects, Operator Overloading, Function and Object Polymorphism, Inheritance, Abstraction, Function Pointers, File I/O.
- Data Structures and Algorithms Implementation and Analysis based on topics covered in CS2800. The following list is not exhaustive –
- Stacks, Queues, Searching and Sorting (Internal and External), Graph Algorithms, Trees (including Balanced and In-Memory/In-Disk Storage), Hash Tables, Dynamic Programming, Matrix Operations (including Multiplication, Transpose, Inverse, Gaussian Elimination).

9 Grading Policy

MidSem	25%	February 26
EndSem	25%	April 23
10 Prog. Assign.	50%	Weekly

10 Academic Honesty

Standard DISCO rules apply. It is your responsibility to protect your code.