**2016 Fall EE602 Syllabus**:Introduction to Algorithms, 3 credits

**Course Description:** This class focuses on the theoretical study of design and analysis of computer algorithms. We will cover the basic techniques, including divide-and-conquer, recurrence, dynamic programming, greedy algorithms, amortized analysis, etc. We will study commonly-used algorithms and data structures, including sorting (merge-sort, quicksort, heapsort), searching, hashing, tree, augmenting data structure, graph (breadth/depth-first search, minimum spanning tree, shortest path), multithreaded algorithms, NP-complete problems and approximation algorithms.

**Prerequisites:** EE367 Data Structures, or ICS311, or similar classes. Please talk to the instructor. Basic understanding of computer systems and programming languages (C or Java).

**Class Format**: Lectures are combined with discussions and, if applicable, student presentations and discussions of advanced topics. Students are expected to be active participants, by studying the relevant chapters and research papers, and participating discussions.

**Class Time and Location:**  MW 3:30-4:45pm at H388

**Instructor**: Yingfei Dong

**Contacts: at**edu or 956-3448 by phone. Your comments are welcome.

**Office Hours**: Holmes Hall 442, MW one hour after the class and by appointment via email or phone.

**Textbook:**  (required) Cormen, Leiserson, and Rivest, and Stein, Introduction to Algorithms,

MIT Press, third edition, 2009, ISBN-10: 0-262-03384-4, or ISBN-13: 978-0-262-03384-8.

**Handouts/Notes and Supplemental Text:** will be available on-line**.**

**Attendance:** Daily attendance is strongly encouraged. Any student missing a lesson is responsible for any material assigned or covered in class during his or her absence.

**Announcements will be sent to you via Laulima.**

**Main Topics**

Part.1 Fundamentals of algorithms: growth functions, divide-and-conquer, merge-sort, recurrence.

Part.2 Sorting and Order Statistics: heapsort, quicksort, order statistics.

Part.3 Data Structures: basic data structure, hash tables, binary search tree, augmenting data structure.

Part.4 Advanced Design and Analysis Techniques: dynamic programming, greedy algorithms, amortized analysis.

Part.5 Graph Algorithms. Breadth/depth-first search, minimum spanning tree, shortest path.

Part.6 Multithreaded algorithms.

Part.7 NP-complete problems and approximation algorithms.

**Homework** will be distributed **via Laulima**. You are encouraged to discuss your homework with your partner, but you must write your answer alone.

Grading:

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| Homework Quizzes | 40% |
| Midterm | 20% |
| Participation (contribution in discussions and questions) | 5% |
| Final | 35% |

**Assignments Guidelines:**

* Unless otherwise specified, all assignments and projects are individual work.
* Assignments and Late Penalty: Assignments and projects will be posted at the class web site. Assignments & projects are due before the beginning of the class on the due day. See Topics and Notes for the due dates. Points will be deducted from late assignments: 50% for the first 24 hours after the due time, 100% after that. No extension will be granted except for documented emergency.
* Start to work on the assignments as early as possible.
* Identification page: All assignments must have your name, and course number at the top of the first page.
* Please staple all the pages together at the top-left corner.
* Please arrange the solutions following the sequence of the questions.
* Word processing: It is required that you type your reports. Use a word processor and appropriate typesetting and drawing tools to do the assignments. Spell-checking the whole document before printing it. You may loose points due to spelling or grammatical errors.

**Policies:**

* Make-up exams will generally not be given. Missing a quiz or exam will result in a score of zero unless extreme extenuating circumstances are discussed with the professor ahead of time or verifiable proof is presented
* Attendance Policy: You are expected to attend all classes. If you miss a class, it is your responsibility to get hold of whatever may have been discussed in the class.
* If you think you have lost some points due to grading errors, make sure you approach the instructor within a week after the assignment, project, or test is returned to you.
* To get the most out of this class, you need to read the textbooks and spend time using computers regularly. Be prepared for a class by preview the material to be covered in that class and participate in discussions and problem-solving exercises, if applicable, in the class.
* Academic dishonesty will not be tolerated in any form. The integrity of our program depends on the integrity of the work done by each student. The University expects a student to maintain a high standard of individual honor in his/her scholastic work. Please refer to UH Student Conduct Code at http://www.catalog.hawaii.edu/reference/appendix02.htm for Academic Honesty, Cheating, Plagiarism, Disciplinary Action, etc.