Algorithms

Course#: EE4033; 901/39000.

Time/Location: Thursdays 2:20–5:30pm (10-min extensions; see lecture notes for more details on class time); BL-112.

Instructor: Yao-Wen Chang (ywchang@ntu.edu.tw).

URL: http://cc.ee.ntu.edu.tw/~ywchang.

Office: BL-428. (Phone/Fax) 3366-3556.

Office Hours: Tuesdays 5–6pm; other times by appointment.

Teaching Assistants: Zhi-Wen Lin (lzw@eda.ee.ntu.edu.tw) & Yen-Chun Liu (ycliu@eda.ee.ntu.edu.tw); BL-406; Tel: 33663700 # 6406; Office Hours: 12:30-1:30pm, Wednesdays & Thursdays, respectively.

Prerequisites: data structures (or discrete mathematics).


Course Objective: Focuses on the design and analysis of algorithms and their applications, and develops problem-solving techniques.

Course Contents: Topics include

- Algorithmic fundamentals: mathematical foundations, growth of functions, recurrences (6 hrs)
- Sorting and order statistics (5 hrs)
- Data structures: heap, binary search trees, RB trees, disjoint sets (4 hrs)
- Advanced design and analysis techniques: dynamic programming, greedy algorithms, amortized analysis (9 hrs)
- Graph algorithms: graph representations, searching, minimum spanning trees, shortest paths, network flow, matching (14 hrs)
- Computational complexity, NP-completeness, and approximation algorithms (7 hrs)
- General-purpose algorithms: branch and bound, simulated annealing, and computational geometry, as time permits.

Grading: Six homework assignments (+ in-class quizzes on the due dates) 30%, three mini programming assignments 20% (all submissions will be subject to duplication checking; those with ≥ 40% similarity will be penalized ), two in-class tests (November 10: 20% + January 12: 30%), and bonuses for class participation.

Attention: The grades on homework, programming assignments, and tests are considered final two weeks after they have been handed back, so you should bring any questions to the grader’s attention promptly.

Homework: Students may discuss the homework problems with one another but must write up their solutions separately. Homework must be handed in at the beginning of the class on which it is due in order to avoid a late penalty. Late homework will incur a penalty of 30 percent of the total score per day for the first three days (Saturdays and Sundays included) and will not be accepted afterwards.


Academic Honesty: Cheating is very uncivilized behavior and is to be avoided at all cost. Oral discussion about homework is not considered cheating. Copying someone else’s homework/test or part of an homework/test is cheating. If cheating is discovered, all students involved will receive no credit for the homework/test, possibly an F grade for the course.