# CS 473 - Algorithms I - 2015-2016 Spring

**Schedule:**

*Section 1*: EE-03 Tuesday 09:40-10:30, Thursday 10:40-12:30 (Ugur Dogrusoz)

*Section 2*: EE-517 Tuesday 10:40-12:00, Friday 09:20-10:30 (M. Mustafa Ozdal)

Mid-week exams – Time & Classroom TBD

**Text Book:** T. H. Cormen, C. E. Leiserson, R. L. Rivest, and C. Stein *Introduction to Algorithms*, Mit Press and McGraw-Hill, 2009. Third Edition

**Instructors:** Ugur Dogrusoz, M. Mustafa Ozdal

**Assistants:** R. Oguz Selvitopi, Tugba Uzluer Torun

**Course Web Page:** <http://cs.bilkent.edu.tr/~reha/473/>

**Credits**: 3, **ECTS Credits**: 6,

**Prerequisites**: CS 202

**Grading:**

* Midterm: 20%
* Final: 20%
* Mid-week exams: 54%
* Attendance: 6%

**Course Contents**

WEEK(1): Introduction: analyzing algorithms, designing algorithms.

WEEK(2): Asymptotic notation.

WEEK(3): Divide and conquer: Strassen

WEEK(4): Randomized quicksort: analysis.

WEEK(5): Medians and order statistics.

WEEK(6): Heaps: heapsort, priority queues.

WEEK(7): Sorting in linear time.

WEEK(8): Dynamic programming: matrix-chain multiplication, longest common subsequence.

WEEK(9): Dynamic programming: 0/1 Knapsack problem, resource allocation problem.

WEEK(10): Greedy algorithms: activity selection problem, Huffman codes.

WEEK(11): Greedy algorithms: task scheduling problem.

WEEK(12): Amortized analysis: aggregate, accounting and potential methods.

WEEK(13): Elementary graph algorithms: BFS, DFS, topological sort, SCC.

WEEK(14): Minimum spanning trees: Prim’s and Kruskal’s algorithms.

**Remarks**

* Copying or communicating during an exam is considered as cheating. Students caught cheating in an exam will be subject to disciplinary action, as explained in the “Student Disciplinary Rules and Regulation.”
* Students failing to obtain 20 points out of 80 points until final exam will get FZ.
* There will be 7 mid-week exams.
* Mid-week exam dates and classrooms will be announced later.
* In mid-week exams, books are open but any other resources are forbidden. (Books must be clean and unused. Books containing any written text are **strictly** not allowed. Sharing books during exam is strictly forbidden.)
* In all exams, android watches, phones, and any other electronic devices must be turned off.
* Each week we will have a mid-week exam and each mid-week exam will contain questions about the topics covered in the respective week.
* One of these mid-week exams having least grade will be omitted at final grading. The least grade is determined for each student individually.
* All students are strictly encouraged to attend all mid-week exams.
* For students missing $m\geq 2$ mid-week exams due to health problems (all of which are reported officially) there will be $m-1$ makeups at the end of semester. Topics of makeups are as same as topics of the final exam.