Syllabus

Course Information

Course Code	CSE530
Course Title	Algorithms and Complexity
Year/Semester	2018/spring
School	ECE
Course Classification	
Classroom/Class Time	106-711 MON WED 14:30-15:45
Grading Type	

Instructor Information

Instructor	Antoine Vigneron Aaram Yun
Office	106-701-1 106-501-3
Telephone	3186 2117
E-mail	antoine@unist.ac.kr aaramyun@unist.ac.kr
Office Hours	

Course Objectives & Description

This course gives a basic introduction to algorithms and complexity. The topics covered are: review of asymptotic notations, elementary data structures and graph algorithms, dynamic programming, maximum flow, linear programming, Turing machine formalism, the classes P and NP, NP-completeness and reduction, and probabilistic algorithms.

Grading

Attendance(10 %) / Homework(20%) / Midterm(35%) / Final Exam(35%)

Weekly Schedule

Week	Contents
01	Introduction. Asymptotic notations and algorithms analysis.
02	Dynamic programming
03	Review of elementary data structures and graph algorithms
04	Maximum flow
05	Introduction to linear programming
06	The simplex algorithm

07	Interior point methods
08	Midterm exam
09	Turing machines, Church-Turing thesis, computability and decidability
10	Time complexity, the class P
11	The class NP and NP-completeness
12	Cook-Levin Theorem
13	Examples of NP-complete problems
14	P vs NP problem, relativization, natural proofs
15	Impagliazzo’s Five Worlds
16	Final exam