

Subject (English)	Fundamentals of Information Science II		Semester	Spring* Quarter Subject	Day/Slot	(1) Mon. / 3rd 13:00-14:30 (2) Wed. / 2nd 10:30-12:00
科目名 (日本語)	情報科学基礎 II					
Course Code	TB15212	Course Numbering	TMA-MEE328E		Period	Jun. 12 – Aug. 8, 2019*
Instructor (Post)	Ryusuke EGAWA (Assoc. Prof.)		*This is a Quarter Subject . Make sure not to conflict with other courses.		Campus	Aobayama
					Building	Mechanical Engineering Lecture Room Building (A02)
Faculty	Department of Mechanical and Aerospace Engineering		Credits	2	Class Room	Room 4
Class subject	Aims: Students will acquire basic knowledge about algorithms and data structures.					
Object and summary of class						
Descriptions: Evaluation methods and programming techniques for making good programs are discussed.						
Keywords	Algorithms, Data Structures, Computation					
Goal of study						
Goals: On completing the course, students will have the ability of designing and making good programs.						
Contents and progress schedule of class						
No	Date	Topics				
1	6/12	Introduction of this course, Computation, Algorithms				
2	6/17	Evaluation of computational complexity				
3	6/19	Data structures, Abstract Data Types (ADTs)				
4	6/24	Basic data structures: array, list				
5	6/26	Basic data structures: stack, queue				
6	7/1	Basic data structures: graph, tree				
7	7/3	Basic data structures: set, table (dictionary), hashing				
8	7/8	Priority queue, heap				
9	7/10	Binary search tree and Balanced search tree				
10	7/17	Sorting: bubble sort, shell sort, bucket sort, radix sort, insertion sort				
11	7/22	Sorting: heap sort, quick sort, merge sort				
12	7/24	Graph searching: breadth-first search, depth-first search				
13	7/29	Graph algorithms: minimum spanning tree, shortest path problem				
14	8/5	Optimization problems				
15	8/7	Wrap-up and Final Examination				
16	8/8	TBC				
Preparation		-				
Record and evaluation method		The grade will come from the in-class final exam and two or three assignments. The final exam might be changed to an additional assignment.				
Textbook and references		<ol style="list-style-type: none"> 『Introduction to Algorithms』 Thomas A. Standish Thomas H. Come, et.al 2009 9780262033848 reference 『Algorithms』 Kevin Wayne and Robert Sedgwick Addison-Wesley Professional; fourth edition 2011032157351X reference 				
Self study		Review: In order to understand the topics better, you should read again the handouts and the reference materials following the lectures.				
In addition		Prerequisite subjects for regular course students are “Practice of Information Processing” and “Computer Seminar I”. Taking “Fundamentals of Information Science I” is strongly recommended. Prerequisite for JYPE/DEEP/IMAC-U students are the similar courses above. Students should have some knowledge about a computer language, preferably C or Java.				