Extended Syllabus

(2024 2nd Semester)

Course Title	Automata Theory	Course Number	CSE 4085
Credit	3	Enrollment Eligibility	3rd Year
Class Time	WF 1:30-2:45pm	Classroom	

Instructor's Photo	Name: Saejoon Kim	Homepage: eclass.sogang.ac.kr
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Ⅰ. Course Overview

1. Description

Automata theory and computational complexity are two of the most beautiful fields in modern computer science, and they are increasingly relevant to other sciences ranging from physics to biology. But this beauty is often buried underneath layers of unnecessary formalism. The aim of this course is to bridge both gaps by explaining the deep ideas of theoretical computer science in a clear and enjoyable fashion, making them accessible to computer scientists who finally want to understand what their formalisms are actually telling.

2. Prerequisites

3. Course Format (%)

Lecture	Discussion	Experiment/Practice	Field study	Presentations	Other
100%	0%	0%	0%	0%	0%

4. Evaluation (%)

mid-term Exam	Final exam	Quizzes	Presentations	Projects	Assignments	Participation	Other
30%	40%	10%	0%	0%	15%	5%	0%

Ⅱ. Course Objectives

This course will cover automata theory in the first half and computational complexity in the second half of the course. So, there will be two textbooks for the two independent but related topics.

Ⅲ. Course Format

(* In detail)

Course will consist of lectures only and there will be quizzes during the lectures throughout the semester.

Ⅳ. Course Requirements and Grading Criteria

See I.4.

Ⅴ. Course Policies

Absence/Late, Homework submission, Exams are managed according to the school regulations.

Ⅵ. Materials and References

Main textbook:

Introduction to the Theory of Computation, 3rd Ed., Sipser, PWS Publishing Co., 2013 (S)

The Nature of Computation, C. Moore and S. Mertens, Oxford University Press, 2011. (M&M)

Ⅶ. Course Schedule

(* Subject to change)

Week 1	Learning Objectives	
	Topics	Overview
	Class Work (Methods)	Lecture
	Materials (Required Readings)	
	Assignments	
Week 2	Learning Objectives	
	Topics	Chap 1 (S)
	Class Work (Methods)	Lecture
	Materials (Required Readings)	
	Assignments	
Week 3	Learning Objectives	
	Topics	Chap 1 (S)
	Class Work (Methods)	Lecture
	Materials (Required Readings)	
	Assignments	
Week 4	Learning Objectives	
	Topics	Chap 2 (S)
	Class Work (Methods)	Lecture
	Materials (Required Readings)	
	Assignments	
Week 5	Learning Objectives	
	Topics	Chap 2 (S)

	Class Work (Methods)	Lecture
	Materials (Required Readings)	
	Assignments	
Week 6	Learning Objectives	
	Topics	Chap 3.1 (S)
	Class Work (Methods)	Lecture
	Materials (Required Readings)	
	Assignments	
Week 7	Learning Objectives	
	Topics	Chap 3.2 (S)
	Class Work (Methods)	Lecture
	Materials (Required Readings)	
	Assignments	
Week 8	Learning Objectives	
	Topics	
	Class Work (Methods)	Midterm Exam
	Materials (Required Readings)	
	Assignments	
Week 9	Learning Objectives	
	Topics	Chaps 1, 2 (M&M)
	Class Work (Methods)	Lecture

	Materials (Required Readings)	
	Assignments	
Week 10	Learning Objectives	
	Topics	Chap 3 (M&M)
	Class Work (Methods)	Lecture
	Materials (Required Readings)	
	Assignments	
Week 11	Learning Objectives	
	Topics	Chaps 3, 4 (M&M)
	Class Work (Methods)	Lecture
	Materials (Required Readings)	
	Assignments	
Week 12	Learning Objectives	
	Topics	Chap 4 (M&M)
	Class Work (Methods)	Lecture
	Materials (Required Readings)	
	Assignments	
Week 13	Learning Objectives	
	Topics	Chap 5 (M&M)
	Class Work (Methods)	Lecture
	Materials (Required Readings)	
	Assignments	

Week 14	Learning Objectives	
	Topics	Chap 5 (M&M)
	Class Work (Methods)	Lecture
	Materials (Required Readings)	
	Assignments	
Week 15	Learning Objectives	
	Topics	Chap 9 (M&M)
	Class Work (Methods)	Lecture
	Materials (Required Readings)	
	Assignments	
Week 16	Learning Objectives	
	Topics	
	Class Work (Methods)	Final Exam
	Materials (Required Readings)	
	Assignments	

Ⅷ. Special Accommodations

IX. Aid for the Challenged Students

Priority in seat assignment, support lecture notes, TA tutoring, extended dues, etc.