



MARMARA UNIVERSITY - FACULTY OF ENGINEERING

2017-2018 Spring

CSE4061 Compiler Design

**COURSE DESCRIPTION FORM**

<b>Offering Department</b>	Department of Computer Engineering		Technical Elective					
<b>Course Code</b>	CSE4061							
<b>Course Name</b>	Compiler Design							
<b>Language of Instruction</b>	English							
<b>ECTS</b>	5							
<b>Contact Hours</b>	Theoretical (T): 3	Practice (P): 0	Laboratory(L): 0					
<b>Pre-requisites</b>								
<b>Instructor</b>	<b>Name</b>	Betül Boz						
	<b>E-mail</b>	betul.demiroz@marmara.edu.tr						
<b>Course Materials</b>	<b>Mandatory</b>	Aho, Sethi, Ullman, "Compilers: Principles, Techniques and Tools"						
	<b>Recommended</b>							
<b>Course Objectives</b>	The aim of this course is to teach the students the basics of compilers, the structures compilers contain, compiler specific algorithms and grammar rules.							
<b>Course Content</b>	Compilers, compilation process, interpreters, lexical analysis, syntax analysis, symbol tables, type checking, intermediate code generation, machine code generation, optimization.							
<b>Learning Outcomes</b>	<b>LO1</b>	Understand the compiler and its basic structures.						
	<b>LO2</b>	Develop algorithms for finite automata) and regular expressions.						
	<b>LO3</b>	Perform grammar and syntax analysis.						
	<b>LO4</b>	Implement algorithms for code generation, optimization, debugging, symbol table management and memory management.						
	<b>LO5</b>	Design your own programming language and develop a compiler to run this language.						
<b>Program Outcomes</b>		<b>LO1</b>	<b>LO2</b>	<b>LO3</b>	<b>LO4</b>	<b>LO5</b>		
<b>PO3</b>	Ability to design a complex system, process, device or product under realistic constraints and conditions, in such a way so as to meet the desired result (a); ability to apply modern design methods for this purpose (b).				a	a		
<b>PO4</b>	Ability to devise (a), select, and use (b) modern techniques and tools needed for engineering practice (1); ability to employ information technologies effectively (2).	1a	1a	1a				
<b>Subjects (Knowledge, Skills and Behaviours), Contributions of Subjects to Learning Outcomes, Assessment Methods</b>	<b>No</b>	<b>Week</b>	<b>Subjects</b>	<b>LO1</b>	<b>LO2</b>	<b>LO3</b>	<b>LO4</b>	<b>LO5</b>
	S1	1	Overview of the compilation process	MF				
	S2	2-3	Lexical Analysis	MF	MF, Q			P
	S3	4-5	Syntax Analysis	MF	MF, Q	MF, Q		P
	S4	6-7	Syntax-directed Translation			MF, Q		P
	S5	8-9	Type Checking					P
	S6	10-11	Runtime Environments				P	P
	S7	12-13	Intermediate Code Generation				P	P
S8	14	Code generation and optimization				P	P	
<b>Assessment Methods and Weights</b>	<b>No</b>	<b>Type</b>	<b>Weight</b>	<b>Implementation Rule</b>		<b>Make-up Rule</b>		
	MF	Midterm, Final	65%	There will be one midterm and one final exam. Exams are closed books and notes. Calculation and communication tools are not allowed during the exams.		Marmara University regulations will be followed for make-up exams.		
	Q	Quiz	15%	2 or 3 quizzes are applied.		-		
	P	Project	20%	Programming and design projects are given. Students are asked to perform a demo for evaluation.				
	<b>TOTAL</b>			100%				
<b>Determining Letter Grades</b>	<ul style="list-style-type: none"> <li>The letter grades will be determined based on the midterm and final exams, quizzes and homeworks.</li> <li>In order to determine the letter grade, a curve or catalog based method will be followed based on the total average scores of the students.</li> <li>The final exam score and the total average score of the student must be at least 35 to pass the course.</li> <li>According to Marmara University Undergraduate regulations, the weight of the final exam must be at least 40 out of 100.</li> </ul>							
	Assessment	Midterm	Quiz	Project	Final	TOTAL		
Weight	25	15	20	40	100			
<b>Teaching</b>	<b>Tme Applied by Instructor</b>							

<b>Method, Student Work Load</b>	<b>No</b>	<b>Method</b>	<b>Explanation</b>	<b>Hours</b>
	1	Lectures	Lectures are given in class using the board or via presentations. Example questions are solved to enhance the concepts.	14x3=42
	2	Problem Session/ Practice	Problems related to the course topics are solved on the board.	-
	3	Laboratory	Experiments are done in the laboratory or theoretical concepts covered during the lectures are practiced using computer exercises.	-
	4	Interactive Courses	Questions are asked to students during lectures and they are encouraged to guess the answers (peer learning is also in this category)	-
	5	Field Work	Students attend activities outside the campus.	-
	6	Midterm	Midterm exam is given during the midterm week.	2
	7	Final	Final exam is given during the final exam week.	2
<b>Estimated Time to be Allocated by a Student</b>				
	8	Project	The students carry out research about the problem given in the project, design and implement their solution and prepare a report.	30
	9	Homeworks	The students solve the problems given as homework.	6
	10	Pre-class learning of Course Material	The students study and learn the new subjects from course materials.	14
	11	Review of Course Material	Students review the course subjects from course materials to prepare for the exams and homeworks.	28
	12	Office Hour	Students ask questions to the instructor or the assistant during office hours.	2
	<b>TOTAL</b>			<b>126</b>
<b>Academic Honesty</b>	<p>Violations of scholastic honesty include, but are not limited to cheating, plagiarizing, fabricating information or citations, facilitating acts of dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students.</p> <p>In case academic dishonesty is observed, the first authority is the instructor of the course. The instructor may decide to give the student zero for the homework(s)/lab(s)/exam(s), give the letter grade FF, or may take disciplinary action.</p>			