

Dersin Adı				Course Name		
PROGRAMLAMAYA GİRİŞ (C)				INT TO SCIENTIFIC AND ENGINEERING COMPUTING (C)		
Kodu (Code)	Yarıyılı (Semester)	Kredisi (Local Credits)	AKTS Kredisi (ECTS Credits)	Ders Uygulaması, Saat/Hafta		
				Ders (Theoretical)	Uygulama (Resitation)	Laboratuvar (Laboratory)
BIL 104E	2-3	3	4.5	2	0	2
Bolum/Program (Department/Program)		Ortak Havuz Common Pool				
Dersin Türü (Course Type)		Temel Mühendislik Engineering Science		Dersin Dili (Course Language)		İngilizce English
Dersin Önkoşulları (Course Prerequisites)		BIL 101E MIN BZ OR BIL 101E MIN FF				
Dersin Mesleki bileşene katkısı % (Course Category by Content, %)		Temel Bilim (Basic Science)	Temel Mühendislik (Engineering Science)	Mühendislik Tasarım (Engineering Design)	İnsan ve Toplum Bilim (General Education)	
		25%	75%	0%	0%	
Dersin İçeriği (Course Description)		<p>C ile programlamaya giriş; giriş/çıkış işlemleri; hafıza yapısı, matematiksel operatörler, Algoritmalar, if, if/else, while yapıları, atama operatörleri; azaltma/artırma operatörleri, Döngü temelleri, Mantıksal operatörler, Eşitlik/atama operatörleri, Modüller, Kütüphane fonksiyonları, Fonksiyonlar, Özyinelemeye karşı yineleme, Diziler, İşaretçiler, Referans yöntemiyle bubble sıralamasının kullanılması, Karakterler ve katar temelleri, Veri hiyerarşisi, Rastgele veri yazma/okuma, Bilimsel görselleştirmeye giriş, Yapı tanımlamaları</p> <p>Introduction to C programming, I/O operations, emory concepts, arithmetic operators, Algorithms, if, if/else, while structures, assignment operators, increment/decrement operators, Essentials of repetition, Logical operators, Equality/assignment operators, Modules, Library functions, functions, Recursion vs. Iteration, Arrays, Pointers, Bubble sort using call by reference, Fundamenals of strings and characters, Data hierarchy, Writing/reading data randomly, Introduction to Scientific Visualization, Structure definitions</p>				
Dersin Amacı (Course Objectives)		<p>1.Özel programlama ortamıyla yeterince aşına olunmasını sağlamak 2.Temel programlama mantığının ve tekniklerinin kavranmasını geliştirmek 3.Bir programın yazılması, derlenmesi, çalıştırılması ve hata ayıklanması bilgilerini geliştirmek 4.Bilimsel ve Mühendislik problemlerini çözmeye kullanılan farklı sayısal yöntemlerin, bilgisayar algoritmaları ve programlama dili üzerine işleyiş bilgisi geliştirmek 5.İleri düzey programlama dili kullanarak öğrencilerin problemleri analiz etme ve çözüme yeteneğini geliştirmek</p> <p>1.to develop enough familiarity with the specific programming environment 2.to develop an understanding of fundamental programming logic and programming techniques 3.to develop the knowledge of editing, compiling, running and debugging of a program 4.to develop a working knowledge on the computer algorithms and programming language of different numerical methods which are used to solve scientific and engineering problems 5.to emphasize on developing the students ability to analyze and solve problems by using high level programming language</p>				

Dersin Öğrenme Çıktıları	<p>Bu dersi başarıyla geçen öğrenciler:</p> <ol style="list-style-type: none"> 1. Programlama dilinin sözdizimini ve yapısını anlayabilecek 2. Bir problemi analiz edebilecek ve algoritma geliştirebilecek 3. Bir programı test edebilecek, derleyebilecek, hata ayıklayabilecek ve doğrulama yapabilecek 4. Prosedürel, prosedürel olmayan, mantık, fonksiyonel pratik programlama becerilerini geliştirecek 5. Problem çözmeye gereken ilgili kütüphaneleri seçip kullanabilecek 6. Kapsamlı örneklerin gereksinimlerini karşılamak için bir program tasarlayabilecek 7. Uygun bir programlama dökümanı ve rapor yazabilecek 		
(Course Learning Outcomes)	<p>Student, who passed the course satisfactorily can:</p> <ol style="list-style-type: none"> 1. understand the syntax and structure of the programming language 2. analyze a problem and develop an algorithm 3. test, compile, debug, and verify the program 4. develop practical programming skills in procedural, nonprocedural, logic, functional 5. select and use the related libraries for solving the problems 6. design a program to meet requirements of comprehensive examples 7. to write appropriate program documentation and report 		
Ders Kitabı (Textbook)	Deitel & Deitel, 2007, C How to Program, Prentice Hall, ISBN:0132404168.		
Diğer Kaynaklar (Other References)			
Ödevler ve Projeler (Homework & Projects)	<ol style="list-style-type: none"> 1. Matematiksel Operatörler, Basit G/Ç İşlemleri, Veri Türleri 2. Tekrarlamalı Çalıştırma Komutları 3. Modüller ve fonksiyonlar 4. Özyineleme/Yineleme, Diziler 5. İşaretçiler, Karakterlerle ilgili kütüphane 6. Rastgele veri ve yapılar Ödevler rapor formatında teslim edilecektir. 		
	<ol style="list-style-type: none"> 1. Arithmetic Operators, simple I/O, Data Types 2. Repetitive Execution Statements 3. Modules and Functions 4. Recursion vs. Iteration Arrays, 5. Pointers, Character Handling Library 6. Random Data and Structures The homeworks will be submitted in a report format 		
Laboratuar Uygulamaları (Laboratory Work)	Derse eşgereklik olarak ilgili laboratuvar oturumu var (There is an associated laboratory session which is a co-requisite)		
Bilgisayar Kullanımı (Computer Use)	Bu derste bilgisayar kullanımı zorunludur (Computer use in this course is compulsory)		
Diğer Uygulamalar (Other Activities)	Yok None		
Başarı Değerlendirme Sistemi (Assessment Criteria)	Faaliyetler (Activities)	Adedi - En az (Quantity - Minimum)	Değerlendirme Katkısı % (Effects on Grading %)
	Yılıçi (Midterm Exams)	2	30%
	Kısa Sınav(Quizzes)		
	Ödevler(Homeworks)	6	30%
	Projeler(Projects)		
	Dönem Ödevi(Term Paper)		
	Lab (Laboratory Work)		
	Diğer Uygulamalar (Other Activities)		
Final Sınavı (Final Exam)	1	40%	

COURSE PLAN

Weeks	Topics	Course Outcomes
1	Intro. to C programming, simple i/o, memory concepts, arithmetic operators, precedence.	1
2	Algorithms, if, if/else, while structures, assignment operators, increment & decrement op	1-2
3	Essentials of repetition, counter controlled repetition, For repetition, switch multiple selections. Do/While repetition, break & continue, logical, equality& assignment operat.	1-3-4
4	Program modules in C, math library functions, functions, function definitions & prototypes, header files,	2-3-4-5
5	Calling functions, random number generation, storage classes, scope rules, recursion, recursion vs. iteration.	3-4-5-6
6	Arrays, declaring arrays, passing arrays to functions, sorting arrays, searching arrays, multiple subscripted arrays	3-4-5-6
7	Pointer variable declaration & initialization, pointer operators, calling functions by reference, using const, qualifier with pointers.	3-5-6
8	Bubble sort using call by reference, pointer expression & pointer arithmetic, relationship between pointers and arrays, arrays of pointers, pointers to functions	3-4-5-6
9	Fundamentals of strings and characters, character handling library. standard I/O, string manipulation, comparison, search and memory functions	5-6-7
10	Formatted I/O: streams, formatting output with printf, integers, floating numbers, string and characters, field widths and precisions. Using flags, literals & escape sequences.	1-3-6-7
11	The data hierarchy, files and streams, creating sequential access file, reading data from sequential access file. Random access files, creating a random access file.	3-4-6-7
12	Writing and reading data randomly to a randomly accessed files. Introduction to Scientific Visualization (gnuplot).	4-6
13	Structure definitions, initializing structures, accessing members of structures.	3-4-5-6
14	Using structures with functions, typedef, unions, bitwise operators, bit fields, enumeration constants.	3-4-5-6

Relationship between the Course and Mechanical Engineering Curriculum

	Program Outcomes	Level of Contribution		
		1	2	3
a	An ability to apply knowledge of mathematics, science, and engineering on mechanical engineering problems			
b	An ability to design and conduct experiments, as well as to analyze and interpret data and use modern tools and equipment.			
c	An ability to select, develop and/or design a system, component, or process to meet desired performance, manufacturing capabilities and economic requirements.			
d	An ability to function on and/or develop leadership in multi-disciplinary teams.			
e	An ability to identify, formulate, and solve mechanical engineering problems.			
f	An understanding of professional and ethical responsibility			
g	An ability for effective written and oral communication in Turkish and English.		X	
h	An ability to understand and comment on the impact of engineering solutions in a national and global context.			
i	A recognition of the need for, and an ability to engage in life-long learning			
j	A knowledge of contemporary issues in mechanical engineering			
k	An ability to use the techniques, skills, and modern engineering tools , such as computer programs, necessary for engineering design and analysis and use modern information systems			X
l	A detailed knowledge of and experience on a specific application field of mechanical engineering			

1: None, 2. Partial, 3. Full

<u>Düzenleyen (Prepared by)</u> Dr. Bülent BÖLAT	<u>Tarih (Date)</u> 09.07.2009	<u>İmza (Signature)</u>
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