

İTÜ
DERS KATALOG FORMU
(COURSE CATALOGUE FORM)

Dersin Adı		Course Name				
Nesneye Dayalı Programlama		Object Oriented Programming				
Kodu (Code)	Yarıyılı (Semester)	Kredisi (Local Credits)	AKTS Kredisi (ECTS Credits)	Ders Uygulaması, Saat/Hafta (Course Implementation, Hours/Week)		
				Ders (Theoretical)	Uygulama (Tutorial)	Laboratuvar (Laboratory)
BLG252 BLG252E	4	3	5	3	-	-
Bölüm / Program (Department/Program)	Bilgisayar Mühendisliği Bölümü / Bilgisayar Mühendisliği Programı Department of Computer Engineering / Computer Engineering Program					
Dersin Türü (Course Type)	Zorunlu, Mühendislik Tasarımı (Compulsory, Engineering Design)		Dersin Dili (Course Language)	Türkçe (Turkish) / İngilizce (English)		
Dersin Önkoşulları (Course Prerequisites)	BİL 104E veya BİL 104 veya BİL 105E veya BİL 105 veya BİL 106 veya BİL 106E veya BİL 108E veya BİL 108 BİL 104E or BİL 104 or BİL 105E or BİL 105 or BİL 106 or BİL 106E or BİL 108E or BİL 108					
Dersin mesleki bileşene katkısı, % (Course Category by Content, %)	Temel Bilim (Basic Sciences)	Temel Mühendislik (Engineering Science)	Mühendislik Tasarım (Engineering Design)	İnsan ve Toplum Bilim (General Education)		
	0	20	80	0		
Dersin İçeriği (Course Description)	Nesneye Yönelik Programlama kavramlarını tanıtır. İyi biçimlenmiş programlar tasarlayabilmek için araçlar, yapılar, biçimler ve temel nesneye yönelik programlama tekniklerini sunar. Sınıflar, nesnelere, metodlar, kalıtım, çokşekillilik, hata kotarma ve şablonlar gibi kavramları işler.					
	Introduces concepts of Object Oriented Programming. Presents tools, structures, syntax, and basic OOP techniques for designing well formed programs. Studies concepts such as classes, objects, methods, inheritance, polymorphism exception handling and template.					
Dersin Amacı (Course Objectives)	1. Nesneye yönelik programlama kavramlarını öğretmek, 2. C++ programlama dilini kullanarak sınıf oluşturma ve nesneye yönelik programlar yazma becerisini kazandırmak, 3. Nesneye yönelik programlar için önceden tanımlanmış sınıfları kullanma becerisini kazandırmak.					
	1. To provide the concepts of Object Oriented Programming, 2. To give an ability to use C++ programming language to develop classes and to write Object Oriented Programs, 3. To give an ability to re-use existing classes to write Object Oriented Programs.					
Dersin Öğrenme Çıktıları (Course Learning Outcomes)	Bu dersi başarıyla tamamlayan öğrenciler; 1. Nesneye dayalı programlamanın fonksiyonlara dayalı programlamadan farkını bilme, 2. Sınıf yapılarını oluşturma, veri gizleme ve nesne yaratma, 3. Kalıtım ile yeni sınıflar oluşturma, 4. Çok şekilli metotlar tanımlama, 5. Sıra dışı durumları denetleme, 6. Şablon fonksiyonlar ve sınıflar oluşturma becerilerini kazanır.					
	Students who pass the course will be able to: 1. Know the difference between functional and object oriented programming, 2. Design class structures by using encapsulation principles and create objects, 3. Design new classes using inheritance, 4. Define polymorphic methods, 5. Create exception handlers, 6. Design template functions and classes.					

Ders Kitabı (Textbook)	Ders Notları, Feza BUZLUCA (Lecture Notes, Feza BUZLUCA)		
Diğer Kaynaklar (Other References)	Bruce Eckel, Thinking In C++, Vol. 1 and Vol. 2, Second Edition, Prentice-Hall,2000.		
Ödevler ve Projeler (Homework & Projects)	Dönem içinde 2 hafta süreli üç programlama ödevi verilir. Three programming assignments are given to be handed in a-two-week period.		
Laboratuar Uygulamaları (Laboratory Work)			
Bilgisayar Kullanımı (Computer Use)			
Diğer Uygulamalar (Other Activities)			
Başarı Değerlendirme Sistemi (Assessment Criteria)	Faaliyetler (Activities)	Adedi (Quantity)	Değerlendirmedeki Katkısı, % (Effects on Grading, %)
	Yıl İçi Sınavları (Midterm Exams)	2	45 (20,25)
	Kısa Sınavlar (Quizzes)		
	Ödevler (Homework)	3	15 (5, 5, 5)
	Projeler (Projects)		
	Dönem Ödevi/Projesi (Term Paper/Project)		
	Laboratuar Uygulaması (Laboratory Work)		
	Diğer Uygulamalar (Other Activities)		
	Final Sınavı (Final Exam)	1	40

DERS PLANI

Hafta	Konular	Dersin Çıktıları
1	Nesneye Yönelik Programlamaya Giriş	1
2	C++ Programlama Dilinin C Programlama Diline Karşı Üstünlükleri	1
3	Sınıf oluşturma	2
4	Sınıf Nesnelerini İklendirme: Constructor	2
5	Sınıf Nesnelerini İklendirme ve sonlandırma: Constructor ve Destructor	2
6	Sınıflar, veri gizliliği ve bütünlüğünün tekrarı	ARASINAV I
7	Operatörleri yeniden tanımlama	3
8	Kalıtım	3
9	Kalıtım, Özel Fonksiyonlar ve Çoklu Kalıtım	3
10	Nesnelere İşaretçi	4
11	Çok Şekillilik	ARASINAV II
12	Aykırı durumlar ve hata kotarma	5
13	Şablonlar	6
14	Standart Şablon Kütüphanesi	6

COURSE PLAN

Weeks	Topics	Course Outcomes
1	Introduction to Object Oriented Programming	1
2	C++ : As a Better C: C++'s Enhancements to C	1
3	Classes and Encapsulation	2
4	Initializing Class Objects: CONSTRUCTORS	2
5	Initializing Class Objects: CONSTRUCTORS and DESTRUCTORS	2
6	Review, Summary of Encapsulation	MIDTERM I
7	Operator Overloading	3
8	Inheritance	3
9	Inheritance, special methods and multiple Inheritance	3
10	Pointers to objects	4
11	Polymorphism	MIDTERM II
12	Exceptions	5
13	Templates	6
14	Standard Template Library (STL)	6

Relationship between the Course and Computer Engineering Curriculum

(1: "Little", 2: "Partial", 3: "Full", Leave blank if your answer is "None")

Computer Engineering Department Program Outcomes and Performance Criteria		Level of Contribution		
		1	2	3
a	an ability to apply knowledge of mathematics, science, and engineering to the field of computer engineering		X	
	a1	Acquiring knowledge of mathematics, science and engineering		
	PC.a1	answers questions on mathematics		
	PC.a2	answers questions on science and engineering		

a2	Applying knowledge of mathematics				
	PC.a3	applies mathematical principles to obtain analytical or numerical solutions to computer engineering problems			
	PC.a4	chooses appropriate mathematical methods/approaches for a given problem			
a3	Applying knowledge of science and engineering fundamentals				X
	PC.a5	applies science and engineering principles to model and solve computer engineering problems			X
b	an ability to design and conduct experiments, as well as to analyze and interpret data			X	
b1	Designing experiments		X		
	PC.b1	selects variables, appropriate equipment, test apparatus, model, etc	X		
	PC.b2	chooses the effective measure(s) by which the outcome or the alternative will be evaluated	X		
b2	Conducting experiments				
	PC.b3	uses appropriate measurement techniques to collect data			
	PC.b4	documents collection procedures so that the experiment may be repeated			
b3	Analyzing data			X	
	PC.b5	selects and uses appropriate tools (i.e., statistical and graphical) to analyze data		X	
b4	Interpreting data			X	
	PC.b6	interprets results with respect to the original hypothesis		X	
c	an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability				X
c1	Identifying stated needs and determining functional requirements and limitations				X
	PC.c1	describes scope of the problem and specifies the requirements based on the desired needs			X
	PC.c2	selects appropriate methods satisfying the constraints and the requirements			X
c2	Developing a design				X
	PC.c3	applies appropriate design methods			X
	PC.c4	designs a software system, component or process			X
	PC.c5	designs a hardware system, component or process			
	PC.c6	presents the complete design with appropriate tools			X
c3	Implementing the design		X		
	PC.c7	develops a solution/prototype based on the design	X		
c4	Testing and validating the developed solution			X	
	PC.c8	describes test cases and strategies		X	
	PC.c9	debugs the developed solution and corrects detected errors			X
d	an ability to observe and examine an existing structure or system in a criticizing attitude and finally correct or enhance it			X	
	PC.d1	observes an existing hardware/software system to analyze its functionality		X	
	PC.d2	analyzes outputs given certain well-chosen inputs that cover different possible cases			X
	PC.d3	finds and corrects defects of a system			X
	PC.d4	enhances a system according to the requirements			X
e	an ability to function on multi-disciplinary teams				
	PC.e1	participates effectively as a team member in a long-term group/multi-disciplinary project team			
	PC.e2	takes and fulfills responsibilities in the team			
	PC.e3	participates in the development of ideas			
	PC.e4	incorporates feedback from others into revisions/improvements			
f	an ability to identify, formulate, and solve engineering problems			X	
	PC.f1	identifies a computer engineering problem		X	
	PC.f2	formally describes constituents of a computer engineering problem		X	
	PC.f3	develops a solution for a computer engineering problem		X	
g	an understanding of professional and ethical responsibility		X		

	PC.g1	is aware of the code of ethics that guide the professional practice of engineering			
	PC.g2	identifies and defines ethical issues concerning a decision	X		
	PC.g3	evaluates and judges a situation in practice, using facts and a professional code of ethics			
h	an ability to communicate effectively		X		
	h1	Written communication of information, concepts, and ideas effectively	X		
	PC.h1	writes a document using an appropriate format and grammar and uses discipline-specific conventions including citations	X		
	h2	Orally communicating information, concepts, and ideas effectively			
	PC.h2	plans, prepares, and delivers a well-organized, logical oral presentation; explains when questioned			
	h3	Graphically communicating information, concepts, and ideas			
	PC.h3	uses professional graphics on written and oral presentations			
i	the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context			X	
	PC.i1	lists several types of impacts an engineering solution might have		X	
	PC.i2	defines key terms associated with understanding of a societal context including society, culture, and global society			
	PC.i3	recognizes the engineering aspects of a global problem		X	
j	a recognition of the need for, and an ability to engage in life-long learning			X	
	j1	Demonstrating an awareness of what needs to be learned		X	
	PC.j1	determines what needs to be learned in an actual project		X	
	j2	Ability to engage in life-long learning			
	PC.j2	applies the learning plan to an actual research project and/or independent learning opportunity			
	PC.j3	attends seminars and training activities			
k	a knowledge of contemporary issues			X	
	PC.k1	identifies engineering problems with potential environmental impact issues		X	
	PC.k2	lists and describes major socio-economic issues			
	PC.k3	lists and describes major political issues at national or international levels			
l	an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice				X
	PC.l1	uses engineering techniques, skills, and tools to monitor performance of an engineering system and/or create an engineering design			X
	PC.l2	uses engineering techniques, skills, and tools to acquire information needed for decision-making			
	PC.l3	selects appropriate techniques and tools for a specific engineering task			X
m	an ability to adapt to changing conditions			X	
	PC.m1	adapts to new tools and approaches		X	
	PC.m2	practices different team roles in a working group			
	PC.m3	is aware of emerging fields and adapts to them	X		

<u>Prepared by</u>	<u>Date</u> 9 Nisan 2014 April 9, 2014	<u>Signature</u>
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