



Marmara Üniversitesi - Fen Bilimleri Enstitüsü

Makine Mühendisliği (İngilizce)

DERS ZİLEME PROGRAMI

2015-2016 Güz Yarıyılı

Ders Kodu	Ders Adı	Ders Türü	Haftalık Ders Saati		Kredi	ECTS	Kampüs / Haftalık Gün ve Saati / Derslik
			T	U			
ME8011.1	Fatigue in Machine Design	Ders	3	0	8,00	8,00	
Önkoşul Dersi			Önkoşullu Dersi				
Öğretim Üyesi	Prof.Dr. PAZLA YAYLA		Öğrenci Görüşme Gün ve Saati				
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Öğretim Üyesi Yardımcıları			Telefon				
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Dersin Tanımı	This course provides candidates with profound knowledge on fracture mechanics and general concepts, loading types, fracture mechanics, historical fracture mechanics, theoretical strength of materials, stress concentration, micro cracks and Griffith's model, linear elastic fracture mechanics, energy balance approach, stress intensity factor approach, relation between (G) and (K), elasto-plastics fracture mechanics, crack tip fracture zone, Calculation of crack tip fracture zone, thickness effects, plane stress - plane strain, fracture toughness tests, elasto - plastic fracture toughness tests, (CTOD) method, (J) integral, (R) curve, static fracture toughness tests, standard jic test, Three point bending test, Compact tension test, double cantilever beam test, dynamic fracture, dynamic energy balance, notched impact tests, instrumented Charpy impact tests, crack arrest test, crack propagation mechanisms, examination techniques, macroscopic examination, microscopic examination, transmission electron microscopy (TEM), scanning electron microscopy (SEM), fatigue, general terminology, factors promoting fatigue crack propagation, application of fracture mechanics to fatigue crack propagation, environmental effects and stress corrosion cracking, creep, creep curve, creep tests, problems						
Dersin Kitabı ve/veya Kaynaklar	Yayla, P., 2007, Kırılma Mekaniği, Çay İlay Kitabevi, 239 Sayfa, İstanbul 2007, ISBN 978-975-436-070-7 Anderson, T.L., Fracture Mechanics: Fundamentals and Applications, CRC Pres, 3rd ed. ISBN 10:0-8493-1656-1, 2005 Broek, D., Elementary_Engineering_Fracture_Mechanics, 3. Ed. Nijhoff, 1982						
Açıklamalar							
HAFTA	Tarih	Konular				Kaynak No - İlgili Bölüm	
1.Hafta	15.9.2015	Fracture mechanics and General Concepts, Loading Types, History of Fracture Mechanics, Theoretical Strength of Materials					
2.Hafta	22.9.2015	Stress Concentration, Micro Cracks and Griffith's Model, Fracture Mechanics and Non-destructive Testing Relation					
3.Hafta	29.9.2015	Linear Elastic Fracture Mechanics, Energy Balance Approach, Stress Intensity Factor approach, Crack Propagation Direction, Relation between G and K					
4.Hafta	6.10.2015	Leak before Break, Mixed Mode Fracture, Crack Branching, Fracture Control					
5.Hafta	13.10.2015	Elast-plastic Fracture Mechanics, Crack Tip Fracture Zone, Calculation of Crack Tip Fracture Zone					
6.Hafta	20.10.2015	Plane Stress-Plane Strain, Failure Assessment Diagrams					
7.Hafta	27.10.2015	Fracture Toughness Tests, Elasto-Plastic Fracture Toughness Tests, Static Fracture Toughness Tests					
8.Hafta	3.11.2015	Midterm examination/Assessment					
9.Hafta	10.11.2015	Dynamic Fracture Mechanics, Experimental Techniques in Determination of K, Parameters effecting Fracture Toughness, The Master Curves Approach in					
10.Hafta	17.11.2015	Crack Propagation Mechanism, Examination Techniques					
11.Hafta	24.11.2015	Macroscopic Examination, Microscopic Examination, Fracture Types					
12.Hafta	1.12.2015	Fatigue, General Terminology on Fatigue, Factors Promoting fatigue Crack propagation					
13.Hafta	8.12.2015	Application of Fracture Mechanics to Fatigue Crack Propagation, Environmental Effects and Stress Corrosion Cracking, Design Against Fatigue Failure, Creep					
14.Hafta	15.12.2015	Fracture of Non-metallic Materials, Fracture of Polymers					
15.Hafta	22.12.2015	Fracture of Fiber Composites, Fracture of Ceramics and ceramics Composites, Fracture of Concrete					
16.Hafta	29.12.2015	Term Seminars					
Değerlendirme Araçları	Ölçme Aracı	Adet	Tarih	Başarı Notuna Katkısı (%)	Yarıyıl / Yıllık Değerlendirme Notuna Katkısı (%)	Sınav Türü	
	Yarıyıl / Yıllık Sınavı	1	-	50	-		
	Bütünleme Sınavı (varsa)	0	-		-		
	Yarıyıl / Yıllık Değerlendirme Bilgileri						
	Mid-Term Exam.	1			30,0	60,0	Ara Sınav
Seminar	1			20,0	40,0	Diğer	