

Dersin Kodu		Dersin Adı	Biotechnology for Biofuels	T	U	L	2	0	0	AKTS	3
Yıl / Yarıyıl	4. Yıl / Güz Dönemi										
Ders Düzeyi	Lisans										
Yazılım Şekli	Seçmeli										
Bölümü	Moleküler Biyoloji ve Genetik										
Ön Koşul	Yok										
Eğitim Sistemi	Yüz yüze										
Dersin süresi	14 hafta – Haftada 2 saat teorik										
Öğretim Elemanı											
Diğer Öğretim Elemanı / Elemanları											
Öğretim Dili	İngilizce										
Staj	Yok										
Dersin Amacı	This course will provide an overview of existing energy utilization, production and infrastructure. And thus, It's broad content aims to ensure that students will be are aware of environmental bioenergy resources and sustainable energy production alternatives. To help them develop familiarity with different biofuel and bioenergy derivatives. To contribute to their awareness of current and future bioenergy R&D approaches and progress.										
Öğrenme Çıktıları											
Öğrenme Çıktıları					PÖKK			ÖY			
Bu dersi başarı ile tamamlayan öğrenciler:											
ÖK - 1:	Students will recognize the types and differences between existing energy resources, understand their procurement and utilization, and their impacts on society and the environment.				1,3,7,11			1,5,6			
ÖK - 2:	Students will be knowledgeable of the existing and potential future sources of renewable energy, and be able to intelligently analyze reported aspects of the energy and renewable energy fields.				1,3,7,11			1,5,6			
ÖK - 3:	Students will be able to interpret the mass media presentation of energy issues, and be able to access the primary literature in relation to renewable energy				1,3,7,11			1,5,6			
PÖKK :Program öğrenim kazanımlarına katkı, ÖY : Ölçme ve değerlendirme yöntemi (1: Yazılı Sınav, 2: Sözlü Sınav, 3: Ev Ödevi, 4: Laboratuvar Çalışması/Sınavı, 5: Seminer / Sunum, 6: Dönem Ödevi / Proje), ÖK : Öğrenim Kazanımı											
Course Description: The course will explore the biotechnological aspects related to the development of bioenergy as a sustainable energy source. It will provide an in-depth examination of the three generations of bioenergy and the associated enabling technologies. The first generation primarily focuses on ethanol production from corn or sugar, while the second generation pertains to the production of lignocellulosic ethanol derived from biomass. The third generation, which is still in the developmental stage, aims to utilize new biomolecules and species for the production of biofuels and bioproducts. Furthermore, the course will cover specialized topics that highlight recent advancements in bioenergy research, as well as current trends in research, government policies, and industrial strategies related to bioenergy.											
Haftalık Detaylı Ders İçeriği											
Hafta	Detaylı İçerik				Önerilen Kaynak						
Hafta 1	Overview of Sustainable Energy Sources & Utilization				1						
Hafta 2	First Generation bioenergy- Crops, Products and Processing				1						
Hafta 3	Second Generation bioenergy- Lignocellulosic Ethanol – Plant Cell Wall Structure and Recalcitrance				1						
Hafta 4	Second Generation Bioenergy – Overview of Biorefinery, Biomass Process and Thermal conversion				1						
Hafta 5	Second Generation Bioenergy – Major Feedstocks - Chemical and Enzymatic Conversion and – Lignin Modification- Cell Wall Digestion Enzymes				1						
Hafta 6	Second Generation Bioenergy Research – Ecological and Environmental Effects				1						
Hafta 7	Biodiesel – Crops, Feedstock and Processing Technology				1						
Hafta 8	Biodiesel – Metabolic Engineering of Feedstocks				1						
Hafta 9	Mid Term										
Hafta 10	Third Generation Bioenergy – Algae and Hydrocarbon										
Hafta 11	Third Generation Bioenergy- Hydrogen and Biological Processes for Hydrogen Production				1						
Hafta 12	Algae-based Hydrogen Production and Water Splitting- The Green Industry – Status and Future				1						
Hafta 13	Fourth Generation Bioenergy – Algae and Microalgae for Biomass and Lipid				1						
Hafta 14	Bioenergy: Government Policy, Sustainable Growth, and International Collaboration				1						
Hafta 15	Student Presentations on Special Bioenergy Topics				1						
Hafta 16	Final exam										

Ders Kitabı / Malzemesi				
1	Nitish Kumar 2020 [1st edition]. Biotechnology for Biofuels: A Sustainable Green Energy Solution Springer. ISBN: 9789811537608			
2				
İlave Kaynak				
1	Supplemented research & review literature			
Ölçme Yöntemi				
Yöntem	Hafta	Tarih	Süre (Saat)	Katkı (%)
Ara sınav	9		1	40
Sunum	13, 14		1	10
Dönem sonu sınavı	16		1	50
Öğrenci Çalışma Yüğü				
İşlem adı	Haftalık süre (saat)	Hafta sayısı	Dönem toplamı	
Yüz yüze eğitim	2	14	28	
Sınıf dışı çalışma	1	8	8	
Laboratuvar çalışması	0	0	0	
Arasınav için hazırlık	2	8	16	
Arasınav	2	1	2	
Uygulama	0	0	0	
Klinik Uygulama	0	0	0	
Ödev	0	0	0	
Proje	0	0	0	
Kısa sınav	0	0	0	
Dönem sonu sınavı için hazırlık	2	14	28	
Dönem sonu sınavı	2	1	2	
Diğer 1	0	0	0	
Diğer 2	0	0	0	
Toplam iş yükü			84	