

GENEL TANIM / GENERAL DESCRIPTION

Ders Adı / Course Name	Energy Investments Based on R&D / Energy Investments Based on R&D	
Ders Kodu / Course Code	9105035272015	
Ders Türü / Course Type		
Ders Seviyesi / Course Level	Second Cycle / Second Cycle	
Ders Akts Kredi / ECTS	8.00	
Haftalık Ders Saati (Kuramsal) / Course Hours For Week (Theoretical)	3.00	
Haftalık Uygulama Saati / Course Hours For Week (Objected)	0.00	
Haftalık Laboratuvar Saati / Course Hours For Week (Laboratory)	0.00	
Dersin Verildiği Yıl / Year	1	
Öğretim Sistemi / Teaching System	Face to Face / Face to Face	
Eğitim Dili / Education Language	Turkish / Turkish	
Ön Koşulu Olan Ders(ler) / Precondition Courses	Yok	None
Amacı / Purpose	Ar-Ge temelli enerji yatırımları dersi ile sanayiye yönelik enerji, enerji tedariki, enerji piyasaları ve bu piyasaları etkileyen ulusal ve uluslararası politikaları kuramsal bir bakış açısı ile ele alınacaktır. Fosile dayalı enerji kaynakları ile yenilenebilir enerji kaynaklarını dikkate alarak enerji üzerine olan vergi, fiyat, düzenleme, yeniden düzenleme, enerji verimliliği ve emisyonların kontrollü salımı gibi konularda yapılan tartışmaların incelenerek öğrenilmesini hedeflemektedir.	This course explores the theoretical perspectives on industrial demand for energy, energy supply, energy markets, and national & international policies affecting energy markets. It discusses aspects of the oil, natural gas, electricity, and nuclear power sectors and examines energy tax, price regulation, deregulation, energy efficiency and policies for controlling emission.
İçeriği / Content	Ar-Ge temelli enerji yatırımları dersi, Enerji teknolojileri: Mevcut durum ve gelecek beklentileri, enerji talep yöntemleri ve çok değişkenli regresyon analizi, elektrik üretimi, dünya enerji piyasaları ve enerji güvenliği, doğal gaz fiyatları, dalgalanmalar, düzenlemeler ve piyasalar, risk yönetimi, future piyasalar ve türev piyasalar, teknoloji ve yenilenebilir enerjilerin yayılımı, elektrik üretimi için yatırım kararları, enerji ve iklim değişikliği, enerji politikaları kapsamaktadır.	The Fundamentals of energy economics course provides Energy demand models, Price formulation, Energy markets, Energy Supply, World oil market, Natural gas price, regulations, deregulations, risk management, Investment decision, Futures markets and derivatives. Lecture focused on Energy and Climate Change, CO2 emissions capture and trade mechanisms. On the other hand, fossil and Nuclear Power, Energy Efficiency Policies, Renewable Energy Policies will be considered.
Önerilen Diğer Hususlar / Recommended Other Considerations	Yok	None
Staj Durumu / Internship Status	Yok	None
Kitap / Malzemesi / Önerilen Kaynaklar / Books / Materials / Recommended Reading	Seven Centuries of Energy Services: The Price and Use of Light in the United Kingdom (1300-2000)." The Energy Journal 27, no. 1 (2006): 139-177. Stern Review of the Economics of Climate Change. Pre-publication edition. London, UK: HM Treasury, October 2007. Barsky, R., and L. Killian. "Oil and the Macroeconomy Since the 1970s." Journal of Economic Perspectives 18, no. 4 (2004): 115-134.	Seven Centuries of Energy Services: The Price and Use of Light in the United Kingdom (1300-2000)." The Energy Journal 27, no. 1 (2006): 139-177. Stern Review of the Economics of Climate Change. Pre-publication edition. London, UK: HM Treasury, October 2007. Barsky, R., and L. Killian. "Oil and the Macroeconomy Since the 1970s." Journal of Economic Perspectives 18, no. 4 (2004): 115-134.

Borenstein, S. "The Long Run Efficiency of Real-Time Electricity Pricing." *The Energy Journal* 26, no. 3 (2005): 93-116.

Borenstein, S. "The Trouble with Electricity Markets: Understanding California's Restructuring Disaster." *Journal of Economic Perspectives* 16, no. 1 (2002): 191-211.

Chinn, M., M. LeBlanc, and O. Coibion. "The Predictive Content of Energy Futures: An Update on Petroleum, Natural Gas, Heating Oil and Gasoline." National Bureau of Economic Research Working Paper 11033 (January 2005).

Considine, T. "Is the Strategic Petroleum Reserve Our Ace in the Hole?" *The Energy Journal* 27, no. 3 (2006): 91-112.

Ellerman, A., P. Joskow, and D. Harrison. "Emissions Trading in the U.S.: Experience, Lessons and Considerations for Greenhouse Gases." Report for the Pew Centre on Global Climate Change (May 2003).

Environmental Protection Agency. "Trends in Greenhouse Gas Emissions."

Flynn, E. "Impact of Technological Change and Productivity on the Coal Market." Energy Information Administration, Issues in Midterm Analysis and Forecasting 2000 (2000).

Hassett, K. and G. Metcalf. "Energy Conservation Investment: Do Consumers Discount the Future Correctly?" *Energy Policy* (June 1993): 710-716.

Herce, M., J. Parsons, and R. Ready. "Using Futures Prices to Filter Short-Term Volatility and Recover a Latent, Long-Term Price Series for Oil." MIT Center for Energy and Environmental Policy Research Working Paper 06-005 (April 2006).

Intergovernmental Panel on Climate Change (IPCC). "Climate Change 2007: The Physical Science Basis: Summary for Policymakers" (February 2007).

Joskow, P. "Deregulation and Regulatory Reform in the U.S. Electric Power Sector." Chapter 4 in *Deregulation of Network Industries: What's Next?* Edited by S. Peltzman and C. Whinston. Washington, D.C.: American Enterprise Institute Press, 2000, pp. 113-188.

Joskow, P. "Incentive Regulation in Theory and Practice: Electricity Distribution and Transmission Networks." Working Paper (2006).

Kaufman, R., S. Dees, P. Karadeloglou, and M. Sanchez. "Does OPEC Matter: An Econometric Analysis of Oil Prices." *The Energy Journal* 25, no. 4 (2004): 67-90.

Killian, L. "Exogenous Oil Supply Shocks: How Big Are They and How Much Do They Matter for the U.S. Economy?" Center for Economic Policy Research, Discussion Paper 5131 (July 2005).

Krautkraemer J., and M. Toman. "Fundamental Economics of Depletable Energy Supply." Resources for the Future, Discussion Paper 03-01 (2003).

Mazighi, A. "The Efficiency of Natural Gas Futures Markets." *OPEC Review* (2003).

McDonlad, S., S. Robinson, and K. Thierfelder. "Impact of Switching Production to Bioenergy Crops: The Switchgrass Example." *Energy Economics* 28 (2006): 243-265.

McGowan, J., and S. Conners. "Windpower: A Turn of the Century Review." *Annual Review of Energy and the Environment* 25 (2000): 147-197.

Nadel, S. "Appliance and Equipment Efficiency Standards." *Annual Review of Energy and the Environment* 27 (2002): 159-192.

Palmer, K., and D. Bullaw. "Cost-Effectiveness of Renewable Electricity Policies." *Energy Economics* 27 (2005): 873-894.

Paltsev, S., J. M. Reilly, H. D. Jacoby, R. S. Eckaus, J. McFarland, M. Sarofim, M. Asadoorian, and M. Babiker. "The MIT Emissions Prediction and Policy Analysis (EPPA) Model: Version 4." MIT Joint Program on the Science and Policy of Global Change, Report No. 125 (August 2005).

Pindyck, R. "Gains to Producers from Cartelization of an Exhaustible Resource." *Review of Economics and Statistics* 60, no. 2 (1978): 238-251.

Pizer, M. "The Evolution of a Global Climate Change Agreement." *American Economics Association Papers and Proceedings* 96, no. 2 (2006): 26-30.

Portney, P., and I. Parry. "Policy Watch: The Economics of Fuel Economy Standards." *Journal of Economic Perspectives* 17, no. 4 (2003): 203-217.

Thomson, V. "Early Observations on the European Union's Greenhouse Gas Emissions Trading Scheme: Insights for United States Policymakers." Report in collaboration with Pew Centre on Global Climate Change (April 2006).

Watkins, G. "Oil Scarcity: What Have the Past Three Decades Revealed?" *Energy Policy*

Borenstein, S. "The Long Run Efficiency of Real-Time Electricity Pricing." *The Energy Journal* 26, no. 3 (2005): 93-116.

Borenstein, S. "The Trouble with Electricity Markets: Understanding California's Restructuring Disaster." *Journal of Economic Perspectives* 16, no. 1 (2002): 191-211.

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Considine, T. "Is the Strategic Petroleum Reserve Our Ace in the Hole?" *The Energy Journal* 27, no. 3 (2006): 91-112.

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Intergovernmental Panel on Climate Change (IPCC). "Climate Change 2007: The Physical Science Basis: Summary for Policymakers" (February 2007).

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Joskow, P. "Incentive Regulation in Theory and Practice: Electricity Distribution and Transmission Networks." Working Paper (2006).

Kaufman, R., S. Dees, P. Karadeloglou, and M. Sanchez. "Does OPEC Matter: An Econometric Analysis of Oil Prices." *The Energy Journal* 25, no. 4 (2004): 67-90.

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Mazighi, A. "The Efficiency of Natural Gas Futures Markets." *OPEC Review* (2003).

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Palmer, K., and D. Bullaw. "Cost-Effectiveness of Renewable Electricity Policies." *Energy Economics* 27 (2005): 873-894.

Paltsev, S., J. M. Reilly, H. D. Jacoby, R. S. Eckaus, J. McFarland, M. Sarofim, M. Asadoorian, and M. Babiker. "The MIT Emissions Prediction and Policy Analysis (EPPA) Model: Version 4." MIT Joint Program on the Science and Policy of Global Change, Report No. 125 (August 2005).

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Portney, P., and I. Parry. "Policy Watch: The Economics of Fuel Economy Standards." *Journal of Economic Perspectives* 17, no. 4 (2003): 203-217.

Pop, D., Hascic, I., Medhi, N., Technology and the diffusion of renewable energy. *Energy Economics* 33 (2011) 648-662.

Portney, P., and I. Parry. "Policy Watch: The Economics of Fuel Economy Standards." *Journal of Economic Perspectives* 17, no. 4 (2003): 203-217.

	34 (2006): 508-514. Wolfram, C. "Measuring Duopoly Power in the British Electricity Market." American Economic Review 89, no. 4 (1999): 805-826.	Thomson, V. "Early Observations on the European Union's Greenhouse Gas Emissions Trading Scheme: Insights for United States Policymakers." Report in collaboration with Pew Centre on Global Climate Change (April 2006). Watkins, G. "Oil Scarcity: What Have the Past Three Decades Revealed?" Energy Policy 34 (2006): 508-514. Wolfram, C. "Measuring Duopoly Power in the British Electricity Market." American Economic Review 89, no. 4 (1999): 805-826.
Öğretim Üyesi (Üyeleri) / Faculty Member (Members)	Doç. Dr. Melih Soner Çelikaş	

ÖĞRENME ÇIKTILARI / LEARNING OUTCOMES

1	Enerji Ekonomisine ait temel kavramlar ile kuramları öğrenebilme	Being able to learn the fundamental of energy economics
2	Enerji talep modellemesinin öğrenilmesi	Being able to understand Energy demand modeling's
3	Dünya petrol piyasaları, Enerji güvenlik analizi, Risk yönetimi, Future piyasalar ve türev argümanların öğrenilmesi	Being able to learn World Oil Markets, Energy Security analysis and also Risk Management, Futures Markets and Derivatives
4	Enerji ve iklim değişikliği ile CO2 emisyonlarının yakalama sistemlerinin ve karbon piyasaları ve ticareti mekanizmalarının değerlendirilip anlaşılması	Being able to evaluate and comprehend the Energy and Climate Change, CO2 emissions capture and trade mechanisms,
5	Yenilebilir enerji teknolojileri üzerinden hareketle ulusal ve uluslararası enerji ve enerji verimliliği politikalarının öğrenilmesi, yorumlanması	Being able to learn Energy Efficiency Policies which will be considered on renewable energy technologies
6	Enerji Teknolojilerinin geleceği ve yol haritaları konusunda bilgilere sahip olmak	Being able to gain an understanding of energy technology futures and its road maps.

HAFTALIK DERS İÇERİĞİ / DETAILED COURSE OUTLINE

Hafta / Week					
1	Teorik Dersler / Theoretical	Uygulama	Lab	Öğretim Yöntem ve Teknikleri/Teaching Methods Techniques	Ön Hazırlık / Preliminary
	Enerji Ekonomisi terimlerine genel bir bakış				
	The Principles of Energy Economics				
2	Teorik Dersler / Theoretical	Uygulama	Lab	Öğretim Yöntem ve Teknikleri/Teaching Methods Techniques	Ön Hazırlık / Preliminary
	Enerji teknolojileri: Mevcut durum ve gelecek beklentileri				
	Energy Technologies: Current Issues and Future Directions				
3	Teorik Dersler / Theoretical	Uygulama	Lab	Öğretim Yöntem ve Teknikleri/Teaching Methods Techniques	Ön Hazırlık / Preliminary
	Enerji talep yöntemleri ve Energy Demands, çok değişkenli regresyon analizi ile çözümleme				
	Energy Demands, Introduction to Multivariate Regression Analysis				
4	Teorik Dersler / Theoretical	Uygulama	Lab	Öğretim Yöntem ve Teknikleri/Teaching Methods Techniques	Ön Hazırlık / Preliminary
	Elektrik üretimi				
	Electricity generation				
5	Teorik Dersler / Theoretical	Uygulama	Lab	Öğretim Yöntem ve Teknikleri/Teaching Methods Techniques	Ön Hazırlık / Preliminary
	Dünya enerji piyasaları ve enerji güvenliği				
	World Oil Markets and Energy Security				

	Teorik Dersler / Theoretical	Uygulama	Lab	Öğretim Yöntem ve Teknikleri/Teaching Methods Techniques	Ön Hazırlık / Preliminary
6	Doğal gaz fiyatları, dalgalanmalar, düzenlemeler ve piyasalar				
	Natural Gas Price Regulation, Deregulation and Markets				
7	Risk yönetimi, Future piyasalar ve türev piyasalar				
	Risk Management, Futures Markets and Derivatives				
8	Yarıyıl sınavı				
	Midterm Exam				
9	Teknoloji ve yenilenebilir enerjilerin yayılımı				
	Technology and the diffusion of renewable energy				
10	Elektrik üretimi için yatırım kararları				
	Investment decision in Power Markets				
11	Enerji ve iklim değişikliği				
	Energy and Climate Change				

	Teorik Dersler / Theoretical	Uygulama	Lab	Öğretim Yöntem ve Teknikleri/Teaching Methods Techniques	Ön Hazırlık / Preliminary
12	Karbon ayakizi, karbon ticareti				
	Carbon footprint,				
13	Karbondioksit yakalama yöntemleri				
	CO2 Emissions capture and trade mechanisms				
14	Genel enerji politikaları				
	Global Energy Policies				
15	Yenilenebilir enerji politikaları				
	Renewable Energy Policies				
16	Yıl sonu sınavı				
	Final Exam				

DEĞERLENDİRME / EVALUATION

Yarıyıl (Yıl) İçi Etkinlikleri / Term (or Year) Learning Activities	Sayı / Number	Katkı Yüzdesi / Percentage of Contribution (%)
Ara Sınav / Midterm Examination	1	100
Toplam / Total:	1	100
Başarı Notuna Katkı Yüzdesi / Contribution to Success Grade(%):		40

Yarıyıl (Yıl) Sonu Etkinlikleri / End Of Term (or Year) Learning Activities	Sayı / Number	Katkı Yüzdesi / Percentage of Contribution (%)
Final Sınavı / Final Examination	1	100
Toplam / Total:	1	100
Başarı Notuna Katkı Yüzdesi / Contribution to Success Grade(%):		60

Etkinliklerinin Başarı Notuna Katkı Yüzdesi(%) Toplamı / Total Percentage of Contribution (%) to Success Grade:	100
Değerlendirme Tipi / Evaluation Type:	

İŞ YÜKÜ / WORKLOADS

Etkinlikler / Workloads	Sayı / Number	Süresi (Saat) / Duration (Hours)	Toplam İş Yüğü (Saat) / Total Work Load (Hour)
Ara Sınav / Midterm Examination	1	4.00	4.00
Final Sınavı / Final Examination	1	4.00	4.00
Derse Katılım / Attending Lectures	14	3.00	42.00
Tartışma / Discussion	14	1.00	14.00
Soru-Yanıt / Question-Answer	10	3.00	30.00
Gözlem / Observation	8	2.00	16.00
Rapor Hazırlama / Report Preparation	10	4.00	40.00
Rapor Sunma / Report Presentation	1	3.00	3.00
Makale Kritik Etme / Criticising Paper	14	3.00	42.00
Bireysel Çalışma / Self Study	8	6.00	48.00
Toplam / Total:	81	33.00	243.00

Dersin AKTS Kredisi = Toplam İş Yüğü (Saat) / 30.00 (Saat/AKTS) = 243.00/30.00 = 8.10 ~ / Course ECTS Credit = Total Workload (Hour) / 30.00 (Hour / ECTS) = 243.00 / 30.00 = 8.10 ~

PROGRAM VE ÖĞRENME ÇIKTISI / PROGRAM LEARNING OUTCOMES

Öğrenme Çıktıları / Learning Outcomes	Program Çıktıları / Program Outcomes									
	1.1.1	1.1.2	1.1.3	1.1.4	1.1.5	1.1.6	1.1.7	1.1.8	1.1.9	1.1.1
1.Enerji Ekonomisine ait temel kavramlar ile kuramları öğrenebilme / Being able to learn the fundamental of energy economics	4									
2.Enerji talep modellemesinin öğrenilmesi / Being able to understand Energy demand modeling's		3					3		3	
3.Dünya petrol piyasaları, Enerji güvenlik analizi, Risk yönetimi, Future piyasalar ve türev argümanların öğrenilmesi / Being able to learn World Oil Markets, Energy Security analysis and also Risk Management, Futures Markets and Derivatives		5			3		4			3
4.Enerji ve iklim değişikliği ile CO2 emisyonlarının yakalama sistemlerinin ve karbon piyasaları ve ticareti mekanizmalarının değerlendirilip anlaşılması / Being able to evaluate and comprehend the Energy and Climate Change, CO2 emissions capture and trade mechanisms,		4			5			5	4	5
5.Yenilebilir enerji teknolojileri üzerinden hareketle ulusal ve uluslararası enerji ve enerji verimliliği politikalarının öğrenilmesi, yorumlanması / Being able to learn Energy Efficiency Policies which will be considered on renewable energy technologies			3			4		5		5
6.Enerji Teknolojilerinin geleceği ve yol haritaları konusunda bilgilere sahip olmak / Being able to gain an understanding of energy technology futures and its road maps.				4					5	

Katkı Düzeyi / Contribution Level : 1-Çok Düşük / Very low, 2-Düşük / Low, 3-Orta / Moderate, 4-Yüksek / High, 5-Çok Yüksek / Very high