



**ORTA DOĐU TEKNİK ÜNİVERSİTESİ
UYGULAMALI MATEMATİK
ENSTİTÜSÜ**



**RAPOR
2009**

**INSTITUTE OF APPLIED MATHEMATICS
MIDDLE EAST TECHNICAL UNIVERSITY
ODTÜ ANKARA 06531
Tel: +90 (312) 210 29 87
Fax: +90 (312) 210 29 85
<http://www.iam.metu.edu.tr>
E-mail: wwwiam@metu.edu.tr**

İÇİNDEKİLER

ÖNSÖZ	2
ÖZET BİLGİLER	4
ENSTİTÜNÜN PROGRAMLARI	5
İNSAN KAYNAKLARI	5
YAYINLAR/TEBLİĞLER*	13
ÇALIŞTAY/ SEMPOZYUM/ KONFERANS/ YAZOKULU	21
ENSTİTÜ ÖĞRETİM ÜYELERİNİN ORGANİZASYONLARINDA BULUNDUKLARI ÇALIŞTAY/ SEMPOZYUM/ KONFERANS/ YAZOKULU	22
YÜRÜTÜCÜLÜĞÜ YAPILAN PROJELER	25
DİĞER FAALİYETLER	29
EKLER	32

ÖNSÖZ

Orta Doğu Teknik Üniversitesi'nde Uygulamalı Matematik Enstitüsü kurulması; Milli Eğitim Bakanlığı'nın 8/5/2002 tarihli ve 12293, 12296 sayılı yazıları, 28/3/1983 tarihli ve 2809 sayılı kanunun değişik ek 30. maddesine göre, Bakanlar Kurulu'nca 16/5/2002 tarihinde kararlaştırılmıştır ve bu karar 21 Haziran 2002 tarihinde resmi gazetede yayınlanmıştır. Enstitü eğitim faaliyetlerini Kriptografi, Bilimsel Hesaplama, Finansal Matematik, Finansal Matematik Hayat Sigortası Opsiyonu ve bu yıl açılan Aktüerya Bilimleri programı ile aşağıdaki misyonlar çerçevesinde sürdürmektedir:

- I. Orta Doğu Teknik Üniversitesi'nin araştırma potansiyeli ve ülkemizin ihtiyaçları göz önüne alınarak, disiplinler arası matematik bazlı araştırma/uygulama alanları belirlemek ve bu çerçevede lisansüstü eğitim programlarını geliştirmek. Üniversitemizde yapılmakta olan matematik ağırlıklı araştırmaları koordine ederek Enstitü bünyesinde disiplinler-arası bir çalışma ortamı oluşturmak, bu alanlarda araştırmaya yönelik konferanslar/yaz okulları düzenlemek ve uluslararası işbirliği olanaklarını araştırmak/hayata geçirmek.
- II. Matematiğin; doğayı, teknolojik ve ekonomik süreçleri daha iyi anlama yolunda bilim adamlarının ortak dili olduğundan hareketle, lisans/lisansüstü eğitimde ve araştırmalarda matematik kullanımının hem nicelik hem de nitelik açısından artırılması yolunda çalışmalarda bulunmak, bu çerçevede yeni, uygulanabilir matematik konularında araştırmacıları bilgilendirmek ve bu amaca yönelik araştırmalar yapmak.
- III. Uygulamalı matematik alanında ODTÜ-Sanayi/Kamu kuruluşları işbirliğini, gerek proje ve ürün geliştirerek gerekse kısa süreli eğitim/araştırma toplantıları düzenleyerek hayata geçirmek.

Bu rapor Uygulamalı Matematik Enstitüsü'nün misyonu çerçevesinde 01.01.2009-31.12.2009 tarihleri arasındaki faaliyetleri içermektedir.

Enstitü Yönetimi

Müdür

Prof. Dr. Ersan AKYILDIZ

(Matematik Bölümü)

Müdür Yardımcıları

Y. Doç. Dr. İlkay ULUSOY

(Elektrik Elektronik Müh.Bl.)

Dr. Burak YEDİERLER

(Fizik Bölümü)

Enstitü Kurulu⁽¹⁾

Prof. Dr. Ferruh ÖZBUDAK

(Matematik Bölümü)

Prof. Dr. Bülent KARASÖZEN

(Matematik Bölümü)

Y. Doç. Dr. Işıl EROL

(İktisat Bölümü)

Doç. Dr. Sevtap KESTEL⁽²⁾

(Aktüerya Bilimleri EABD)

Enstitü Yönetim Kurulu⁽¹⁾

Prof. Dr. Haluk AKSEL

(Makina Müh.Bölümü)

Y. Doç. Dr. Seza DANIŞOĞLU

(İşletme Bölümü)

Prof. Dr. Mete SEVERCAN

(Elektrik Elektronik Müh.Bl.)

(1) Enstitü Yönetimi, bu kurulların doğal üyeleridir.

(2) Dr. B. Burçak BAŞBUĞ ERKAN, Aktüerya Anabilim dalı Başkanlığı görevinden 17 Eylül 2009 tarihinde ayrılmış yerine Y. Doç. Dr. Sevtap KESTEL atanmıştır.

ÖZET BİLGİLER

- Enstitünün 2009 yılı faaliyetlerine 7 UME, 34 ODTÜ içi, 20 ODTÜ dışı bağlantılı öğretim üyesi katkıda bulunmuşlardır.
- Enstitüde toplam 16 araştırma görevlisi vardır, bunların 7'si Öğretim Üyesi Yetiştirme Programı (ÖYP) ve biri de 35. madde kapsamında görev almaktadır. Bir asistanımız ise Amerika Birleşik Devletleri Florida State Üniversitesi'nde YÖK burslusu olarak çalışmalarını sürdürmektedir.
- Enstitüde toplam 169 öğrenci eğitimini sürdürmektedir. Bu öğrencilerin 14'ü Aktüerya Bilimleri, 28'i Bilimsel Hesaplama, 61'i Finansal Matematik, 66'sı ise Kriptografi programındadır.
- Bu faaliyet yılında Enstitü anabilim dallarından 11 tezli yüksek lisans, 12 tezsiz yüksek lisans ve 2 doktora öğrencisi mezun olmuştur.
- Enstitü anabilim dallarının 11 araştırma grubu bulunmaktadır.
- Enstitü bağlantısı belirtilmiş olarak 32 yurtdışı yayın, 11 yurtdışı tebliğ, 75 yurtdışı sunum, 1 yurtiçi yayın ve 1 yurtiçi sunum gerçekleştirilmiştir.
- Enstitü bağlantısı belirtilmiş 5 özel sayılı dergi editörlüğü yapılmıştır.
- Enstitü tarafından "Workshop on Recent Advanced in Probability and Statistics on the Memory of Prof. Jürgen Lehn" konulu bir çalıştay (23-24 Nisan 2009) düzenlenmiştir.
- Enstitü öğretim üyeleri, 21 çalıştay/sempozyum/konferans/yazokulu organizasyonunda görev almışlardır.
- Enstitü bünyesinde yürütücülüğü yapılan 18, araştırmacı olarak yer alınan 3 proje bulunmaktadır.
- Enstitüyü yurtdışından 19 öğretim üyesi ziyaret ederken, 43 öğretim elemanı da enstitü tarafından desteklenerek yurt dışında görevlendirilmiştir.
- Dr. B. Burçak BAŞBUĞ ERKAN, Aktüerya Anabilim dalı Başkanlığı görevinden 17 Eylül 2009 tarihinde ayrılmış yerine Doç. Dr. Sevtap KESTEL atanmıştır.

ENSTİTÜNÜN PROGRAMLARI

Aktüerya Bilimleri	Bilimsel Hesaplama	Finansal Matematik	Kriptografi
Tezli Yüksek Lisans Tezsiz Yüksek Lisans	Tezli Yüksek Lisans Doktora	Tezli Yüksek Lisans Tezsiz Yüksek Lisans Doktora	Tezli Yüksek Lisans Tezsiz Yüksek Lisans Doktora

İNSAN KAYNAKLARI

Öğretim Elemanları

Prof. Dr. Gerhard- Wilhelm Weber
Prof. Dr. Martin Rainer
Doç. Dr. Emrah Çakçak
Y. Doç. Dr. Sevtap Kestel
Y. Doç. Dr. Hakan Öktem
Y. Doç. Dr. Ömür Uğur
Y. Doç. Dr. Ali Devin Sezer

Araştırma Görevlileri

Sedat Akleylek (ÖYP, 19 Mayıs Üniv.)
Derya Altıntan (ÖYP, Selçuk Üniv.)
Derviş Bayazıt (YÖK Bursu Florida State Univ., USA)
Mehmet Burak Bozdemir
Canan Çimen
Çağdaş Çalık
Nüket Erbil (ÖYP, Fırat Üniv.)*
Zeynep S. Alparslan Gök (ÖYP, Süleyman Demirel Üniv.)**
İ. Ethem Güney*
Rita İsmailova (ÖYP, Kırgızistan)
Ayşegül İşcanoğlu Çekiç (ÖYP, Selçuk Üniv.)
Turgut Hanoymak (ÖYP, Yüzüncü Yıl Üniv.)
Barış Bülent Kırklar (ÖYP, Süleyman Demirel Üniv.)
Ayşe Sarıaydın (ÖYP, Yüzüncü Yıl Üniv.)
Cihangir Tezcan
Önder Türk
Oğuz Yayla
Enes Yılmaz (35. madde)
Serkan Zeytun

DOSAP/POST-DOC

- **Pooya Farshim** (İngiltere), Kriptografi Anabilim Dalı, Öğretim Üyesi Prof. Dr. Ersan Akyıldız (5 Mayıs 2008-12 Ocak 2009).
- **Adnane Sboui** (Tunus), Kriptografi Anabilim Dalı, Öğretim Üyesi Prof. Dr. Ferruh Özbudak (13 Ağustos 2008- 13 Ağustos 2009).

*2009 yılı içinde araştırma görevliliğinden ayrılmışlardır.

**2009 yılı içinde üniversitelerine dönmüşlerdir.

BAĞLANTILI ÖĞRETİM ÜYELERİ

ORTA DOĞU TEKNİK ÜNİVERSİTESİ

Matematik Bölümü	Marat U. Akhmet Ersan Akyıldız Feza Arslan Ali Doğanaksoy Bülent Karasözen Ferruh Özbudak Münevver Tezer Muhiddin Uğuz	İşletme Bölümü	Nuray Güner Adil Oran Seza Danişoğlu
Elektrik-Elektronik Mühendisliği Bölümü	Yeşim Serinağaoğlu Doğrusöz Nevzat G. Gençer M. Kemal Leblebicioğlu Mete Severcan İlkay Ulusoy Melek Yücel Cüneyt Bazlamaççı	Kimya Müh. Bl.	Yusuf Uludağ Gürkan Karakaş
İstatistik Bölümü	B. Burçak Başbuğ İnci Batmaz Zeynep Kalaylıoğlu Ceylan Yozgatlıgil	Fizik Bölümü	Yusuf İpekoğlu Burak Yedierler
İktisat Bölümü	İşıl Erol Esma Gaygısız	Endüstri Müh. Bl.	Gülser Köksal
Biyoloji Bölümü	Semra Kocabıyık	Kimya Bölümü	Ali Gökmen
		Beden Eğitimi ve Spor Bl.	Feza Korkusuz
		Enformatik Enstitüsü	Ü.Erkan Mumcuoğlu
		Makine Müh. Bl.	Haluk Aksel

ÜNİVERSİTELER

ANKARA ÜNİV.
İstatistik Bölümü Ömer Gebizliođlu

KOÇ ÜNİV.
Mühendislik Fakültesi Metin Türkay

BAHÇEŞEHİR ÜNİV.
Department of Computer
Education&Instructional
Technologies İrini Dimitriyadis
Süreyya Özöğür

UNIV. OF CALIFORNIA
SANTA BARBARA Çetin Kaya Koç

DİCLE ÜNİV.
İstatistik Bölümü Pakize Taylan

RMIT ÜNİV.
Matematik Bölümü Serdar Boztaş

DOĞUŞ ÜNİV.
Matematik Bölümü İsmail Gülođlu

TRAKYA ÜNİV.
İktisat Bölümü Kasırga Yıldırak

FLORIDA STATE UNIV.
Department of Mathematics Giray Ökten

TOBB-ETU
Matematik Bölümü Zülfükar Saygı

İZMİR YÜKSEK TEKNOLOJİ
ENSTİTÜSÜ
Matematik Bölümü Ali İhsan Neslitürk

CONCORDIA-UNIVERSITY-
JOH MOLSON SCHOOL OF
BUSİNESS
Department of Finance Dođan Tırtırođlu

KAISERSLAUTERN UNIV.
Ralf Korn

KURUMLAR

KIRIKKALE ÜNİV.
İstatistik Bölümü Fatih Tank

EGESİTAŞ Tolga Yalçın

MAX-PLANCK ENSTITUTE
Jost Jurgen

TCMB C.Coşkun Küçüközmen

TÜBİTAK-UEKAE Orhun Kara

DİĞER Azize Hayfavi
Yeliz Yolcu

İDARİ PERSONEL

Sekreter Nejla Erdođdu
Rukiye Ekinci
Figen Varol

İdari Amir Saffet Aykın

Memur M. Kemal Yaşar
TÜBİTAK-KAMU Proje Elemanı Burçin Ak*

Görevli Muharrem Kayabel
Serkan Demiröz

* 21.5.2009 tarihinde bu görevinden ayrılmıştır.

PROTOKOLLER

Universität Kaiserslautern (Germany) and Middle East Technical University		Cooperation in the Field of Financial and Insurance Mathematics at Institute of Applied Mathematics
University of the Aegean (Greece) and Middle East Technical University		Cooperation in the fields of Financial Mathematics, Actuarial Sciences and Establishment of a Joint Doctoral Program at Institute of Applied Mathematics
The Institute of Mathematics of The Polish Academy of Sciences (Poland) and Institute of Applied Mathematics and Department of Mathematics		Memorandum on Extending and Strengthening Links Between Polish Academy of Sciences and the Department of Mathematics and Institute of Applied Mathematics
Laboratoire de Mathématiques et Applications Université de La Rochelle (France) and Institute of Applied Mathematics		Turkish-French University and Scientific Cooperation Projects: Exchange of know-how in Financial Mathematics, Development of common teaching and research programs, Joint participation to European research projects.
University of Ballarat, (Australia) and Middle East Technical University		Collaboration between the Centre for Informatics and Applied Optimization, University of Ballarat Australia, and the Institute of Applied Mathematics, the Middle East Technical University, Turkey.
Bilgi Teknolojileri ve İletişim Kurumu- ODTÜ		Bilgi ve İletişim Teknolojileri Konularında Eğitim, Araştırma, Geliştirme Çalışmaları ve Uygulamalarında İşbirliği Yapılması, yürütücü, Uygulamalı Matematik Enstitüsü Müdürlüğü, ODTÜ
<ul style="list-style-type: none"> - MPI for Mathematics in the Sciences, Research Group on Complex Systems, Leipzig (Australia) - Interdisciplinary Center for Bioinformatics, University of Leipzig (Australia) - The Institute of Applied Mathematics - CAS-MPG Partner Institute for Computational Biology, Shanghai (China) - Koç University - Işık University 		Collaboration in the fields of mathematical modeling of biological networks, network dynamics and information processing, algebraic structure of graphs and discrete and continuous optimization problems in computational biology.
The ValuePrice AG(Germany) and Middle East Technical University		Cooperation is intended to contribute to scientific and industrial cooperation and Exchange between both countries at Institute of Applied Mathematics
Universität Ulm LLP (Lifelong Learning Programme) ERASMUS Academic Years 2009/10-2011/12(Germany) and Middle East Technical University		Both parties agree to abide by the principles and conditions set out in the Guidelines for Applicants and the Erasmus Charter at Institute of Applied Mathematics
Università degli Studi dell'Aquila (Italy) ERASMUS Academic Years 2008/2013 and Middle East Technical University		Both parties agree to adhere to the principles and conditions as stated in the Erasmus University charter and conditions are stated in the LLP/Erasmus Guidelines at Institute of Applied Mathematics

İLİŞKİDE BULUNDUĞUMUZ DİĞER ARAŞTIRMA KURUMLARI

- Department of Mathematics, Illinois State University, USA, in Biomathematics.
- Russian Academy of Sciences, Department of the Computational Methods of Forecasting, Moscow.
- Max-Planck Institute, Germany.
- Faculty of Mathematics and Economics, University of Ulm, LLP (Lifelong Learning Programme), (Germany) Erasmus Program.
- Center of Research-Euro-Mediterranean- in Mathematics and Their Applications, CREMMA, in Tunisia.
- Department of Mathematics, Darmstadt University of Technology (Germany), DAAD (German Academic Exchange Program) Program in Optimization Theory.
- Eureka Ibero America, Iberian-American Network of Knowledge Discovering, Iberian American Program of Science.
- IBM (Research Centers in New York, Zurich and Haifa)
- Department of Mathematics, Eindhoven University of Technology, The Netherlands.
- Department of Mathematics, University of L'Aquila, Italy, European Erasmus Mundus Programme.
- Department of Mathematics, Universitat Kaiserslautern (Germany)

ÖĞRENCİ BİLGİLERİ

SIAM-IAM ODTÜ ÖĞRENCİ TOPLULUĞU

SIAM (Society of Industrial and Applied Mathematics) IAM (ODTÜ) Öğrenci Topluluğu; Uygulamalı Matematik Enstitüsü'nün çalışmaları sonucu Amerika ve Kanada dışında kurulan ilk SIAM öğrenci grubudur. Grubun amaçları, SIAM'ı ve SIAM'ın faaliyetlerini Üniversite'de ve Türkiye'de tanıtmaktır. Grup hakkında ayrıntılı bilgi www.siam.metu.edu.tr adresinde verilmiştir.

Enstitümüzün Toplam Öğrenci Sayısı:
169

2009 yılında Kayıt Yaptıran Öğrenci Sayısı:
59

2009 Yılında Mezun Olan Öğrenci Sayısı*:
25

Yüksek Lisans Tezli	Yüksek Lisans Tezsiz	Doktora
11	12	2

BAŞVURULAR

	2009-2010		
	BAŞVURU	KABUL	KAYIT
Aktüerya Bilimleri	16	16	11
Bilimsel Hesaplama	13	9	6
Finansal Matematik	60	41	20
Kriptografi	35	27	22
Toplam	124	93	59

* Bu öğrencilerin listesi **Ek 4**'de verilmiştir.

Enstitümüz Öğrencilerinin Programlara Göre Dağılımı

Anabilim Dalı	Yüksek Lisans	Doktora	Bilimsel Hazırlık	İngilizce Hazırlık	İzinli
Aktüerya Bilimleri (14)	14	-	-	-	-
Bilimsel Hesaplama (28)	12	11	-	1	4
Finansal Matematik (61)	35	13	6	-	7
Kriptografi (66)	22	33	3	-	8
Toplam: (169)	83	57	9	1	19

2009 yılında Kayıt Yaptıran Öğrencilerin B.S. Derecelerini Aldıkları Bölümlere Göre Dağılımları*

MATH	STAT	BA	CENG	IE	Avionics Eng.	ECON	EME	AEE	CE	BIOL
31	6	5	4	3	3	2	2	1	1	1

UME Derslerini Alan Öğrencilerin Bölümlere Göre Dağılımı**

Dönem	UME	M	E	P	ME	ES	B	G	CE	C	E	STAT	I	BME	A	IR	B	Özel Öğr.	T
2008-2009 II	201	11	8	5	3	1	-	3	-	2	-	-	-	3	-	2	1	9	249
2009-2010 I	243	4	3	2	1	-	6	3	3	6	2	2	1	2	3	1	2	17	301

Dönemsel Ders İstatistikleri:

	Verilen Ders Sayısı	Toplam Öğrenci Sayısı	Ders Başına Verilen Not Sayısı
2008-2009 II.Dönem	21	249	12
2009-2010 I.Dönem	22	301	14

*Bölüm isimlerinde ODTÜ Katalogunda ki kısaltmalar kullanılmıştır.

** Enstitümüzde 2008-2009 II ve 2009-2010 I. Döneminde verilen derslerin listesi **Ek 6'** da verilmektedir.

Öğrenci Başarı Durumları

	2008-2009 I.Dönem				2008-2009 II.Dönem			
	Başarılı	Başarısız	İlişigi Kesilen	İzinli	Başarılı	Başarısız	İlişigi Kesilen	İzinli
Kriptografi (Bil.Haz.)	6	-	1	-	1	-	-	-
Kriptografi (M.Sc.)	23	3	-	1	23	5	1	2
Kriptografi (Ph.D.)	32	2	3	2	28	-	2	4
Bilimsel Hesaplama (M.Sc.)	11	-	-	-	11	1	-	1
Bilimsel Hesaplama (Ph.D.)	12	-	-	1	11	-	-	-
Finansal Matematik (Bil. Haz.)	3	-	-	-	1	-	-	-
Finansal Matematik (M.Sc.)	24	13	7	1	26	7	4	2
Finansal Matematik (Ph.D.)	11	-	2	6	14	-	-	4
Hayat Sigortası (M.Sc.)	2	-	-	-	-	-	-	-
Aktüerya Bilimleri (M.Sc.)	3	3	-	-	6	-	-	-
TOPLAM (172+154)	127	21	13	11	121	13	7	13

ÖYP Öğrencileri Başarı Durumları

Üniversitesi	Bilimsel Hesaplama			Finansal Matematik			Kriptografi			Başarılı	Başarısız	Mezun
	YL	Doktora	LSD	YL	Doktora	LSD	YL	Doktora	LSD			
Fırat Üniversitesi ELAZIĞ	-	-	-	1	-	-	-	-	-	-	1	-
Selçuk Üniversitesi KONYA	-	1	-	-	1	-	-	-	-	2	-	-
Süleyman Demirel Üniversitesi ISPARTA	-	-	1	-	-	-	-	1	-	1	-	1
Yüzüncü Yıl Üniversitesi VAN	1	-	-	-	-	-	-	-	1	2	-	-
Ondokuz Mayıs Üniversitesi SAMSUN	-	-	-	-	-	-	-	1	-	1	-	-
Kırız Türkiye Manas Üniversitesi	-	-	-	-	-	-	-	1	-	1	-	-

ARAŞTIRMA FAALİYETLERİ

YAYINLAR/TEBLİĞLER*

Yurtdışı Yayın	Yurtdışı Tebliğ	Yurtdışı Konferanslarda Sunum
32	11	75

SCI-EXPANDED LİSTESİNDEKİ DERGİLERDE Kİ YAYINLAR

- **W. Meidl, F. Özbudak**, “Linear Complexity over F_q and over F_{q^m} for linear recurring sequences”, Finite Fields and Their Applications, vol. 15, pp. 110-124, 2009. **SCI-A**
- **M. Cenk, F. Özbudak**, “Improved Polynomical multiplication formulae over F_2 using Chinese Remainder Theorem”, IEEE Transactions on Computers, vol. 58, no 4, pp. 572-576, 2009. **SCI-A**
- **F.-W. Fu, H. Niederreiter, F. Özbudak**, “Joint linear complexity of multisequences consisting of arbitrary linear recurring sequences”, Finite Fields and Their Applications, vol. 15, no 4, pp. 475-496, 2009. **SCI-A**
- **H. Özadam, F. Özbudak**, “A note on negacyclic and cyclic codes of length p^s over a finite field of characteristic p ”, Advances in Mathematics of Communications, vol. 3, no 3, pp. 265-271, 2009. **SCI-A**
- **G.-W. Weber, E. Kropat, B. Akteke-Öztürk, Z.-K. Görgülü**, “A survey on OR and mathematical methods applied on gene-environment Networks”, Central European Journal of Operations Research (CEJOR) 17, 3, pp. 315-341, 2009. **SCI-Exp.**
- **Z. Barzily, Z. Volkovich, B. Akteke-Öztürk, G.-W. Weber**, “On a minimal spanning tree approach in the cluster validation problem”, in the special issue of INFORMATICA 20, 2 pp. 187-202, 2009. **SCI-Exp.**
- **M.U. Akhmet**, “Dynamical synthesis of quasi-minimal sets”, Int. J. Bifurcation and Chaos, 19, no. 7 (2009) 1-5. **SCI-A**
- **M.U. Akhmet**, “Shadowing and dynamical synthesis”, Int. J. Bifurcation and Chaos, Int. J. Bifurcation and Chaos, 19, no. 10 (2009) 1-8. **SCI-A**
- **M.U. Akhmet**, “Li-Yorke chaos in the system with impacts”, J. Math. Anal. Appl. 351 no. 2, pp. 804-810, 2009. **SCI-A**
- **M.U. Akhmet**, “The complex dynamics of the cardiovascular system”, Nonlinear Anal. 71 pp. e1922-e1931, 2009. **SCI-A**
- **D. Altıntan, Ö. Uğur**, “Variational Iteration Method for Sturm-Liouville Differential Equations”, Computers and Mathematics with Applications, 58(2), pp. 322-328, 2009. **SCI-A**
- **K. Yapıcı, B. Karasözen, Y. Uludağ**, “Finite Volume Simulation of Viscoelastic Laminar Flow in a Lid-driven Cavity”, Journal of Non-Newtonian Fluid Mechanics, 164, pp. 51-65, 2009. **SCI-A**
- **B. Karasözen, H. Öktem, M. Kahraman**, “A Model of Angiogenesis by Hybrid Systems with Delay on the Piecewise Constant Part”, Journal of Process Control, 19, pp. 1257-1264, 2009. **SCI-A**
- **A. Aydın, B. Karasözen**, “Multi-symplectic integration of coupled non-linear Schrödinger system with soliton solutions”, International Journal of Computer Mathematics, 86, pp. 864–882, 2009. **SCI-B**
- **R. Korn, S. Zeytun**, “Solving optimal investment problems with structured products under CVaR constraints”, Optimization, 58, 3, 291-304, (2009). **SCI-Exp**

* Tüm araştırma faaliyetlerinde sadece UME bağlantılarını belirtmiş öğretim üyelerimizin faaliyetleri dikkate alınmıştır.

- **F. Koyuncu, F. Özbudak**, “Integral and homothetic indecomposability with applications to irreducibility of polynomials”, Turkish J. Of Mathematics, vol.33, no.3, pp 283-294, 2009. **SCI-Exp.**
- **S.A. Kemaloglu, Ö.L. Gebizlioğlu**, “Risk analysis under progressive type II censoring with binomial claim numbers”, Journal of Computational and Applied Mathematics , V. 233, pp. 61-72, 2009. **SCI-A.**
- **S.Z. Alparslan Gök, S. Miquel, S. Tijs**, “Cooperation Under Interval Uncertainty”, Mathematical Methods of Operations Research, Vol. 69, no. 1, 99-109, 2009. **SCI-A.**
- **Ö. L. Gebizlioğlu, J. Dhaene**, “Risk measures and solvency-special issue guest editors’ foreword”, Journal of Computational and Applied Mathematics , V. 233, pp. 1-2, 2009. **SCI-A.**
- **Ö. Ugur, S.W. Pickl, G.-W. Weber, R. Wünschiers**, “An algorithmic approach to analyze genetic networks and biological energy production”: an introduction and contribution where OR meets biology, Optimization 58, 1, pp. 1-22, 2009. **SCI-A.**
- **G.-W. Weber, S.Z. Alparslan-Gök, B. Söyler**, “A new mathematical approach in environmental and life sciences: gene-environment networks and their Dynamics”, Environmental Modeling & Assessment 14, 2, pp. 267-288, 2009. **SCI-A.**
- **U. Kaplan, M. Türkay, L. Biegler, B. Karasözen**, “Modeling and Simulation of Metabolic Networks for Estimation of Biomass Accumulation Parameters”, Discrete Applied Mathematics 157, pp. 2483-2493, 2009. **SCI-A.**
- **S. Özögür, J. Shawe-Taylor, G.-W. Weber, Z.B. Ögel**, “Pattern analysis for the prediction of eukaryotic pro-peptide cleavage sites”, in the special issue Networks in Computational Biology of Discrete Applied Mathematics 157, 10 pp. 2388-2394, 2009. **SCI-A**
- **B. Yedierler**, "Nonlinear Longitudinal Compression of Short Laser Pulses in the Atmosphere", Phys. Plasmas 16, 053104 (2009). **SCI-A**
- **M. Rainer**, “Calibration of stochastic models for interest rate derivatives”, Optimization, 58, Taylor & Francis, U.S.A, 373-388, (3/2009). **SCI-A.**
- **A. D. Sezer**, “Importance sampling for a Markov modulated queuing network”, Stochastic Processes and Their applications, 119, 2, Elsevier, Netherlands, 491-517, (2009). **SCI-A**
- **G.-W. Weber, Ö. Uğur, P. Taylan, A. Tezel**, “On optimization, dynamics and uncertainty: a tutorial for gene-environment Networks”, in the special issue Networks in Computational Biology of Discrete Applied Mathematics 157, 10, pp. 2494-2513, 2009. **SCI-A**

ULUSLARARASI BİR İNDEKLE TARANAN HAKEMLİ DERGİLERDE Kİ YAYINLAR

- **F.-W. Fu, H. Niederreiter, F. Özbudak**, “Joint linear complexity of multisequences consisting of linear recurring sequences”, Cryptography and Communications, vol. 1, pp. 3-29, 2009.
- **G.-W. Weber, S. Özögür-Akyüz, E. Kropat**, “A review on data mining and continuous optimization applications in computational biology and medicine”, in Embryo Today, Birth Defects Research (Part C) 87, pp. 165-181, 2009.
- **V. Tsybulin, A. Nemtsev, B. Karasözen**, “A mimetic finite-difference scheme for convection of multicomponent fluid in a porous medium”, Lecture Notes in Computer Science, Vol. 5743, pp. 322-333, 2009.
- **Y.Yolcu Okur**, “White noise generalization of the Clark-Ocone formula under change of measure”, Journal of Stochastic Analysis and Applications, 2009.
- **M. Akhmet, E. Yılmaz**, “Hopfield-type neural networks systems with piecewise constant argument”, International Journal of Qualitative Theory of Differential Equations and Applications Vol. 3, No. 1-2, pp. 8–14, 2009.

ULUSLARARASI KONFERANSLARDA TEBLİĞLER

- **O. Özen, K. Varıcı, C. Tezcan, Ç. Kocair**, “Lightweight Block Ciphers Revisited: Cryptanalysis of Reduced Round PRESENT and HIGHT”, Information Security and Privacy - 14th Australasian Conference, ACISP 2009, volume 5594 of Lecture Notes in Computer Science, Springer-Verlag, pp. 90-107, 2009.
- **J.-P. Aumasson, Ç. Çalık, W. Meier, O. Özen, R. C.-W. Phan, K. Varıcı**, "Improved Cryptanalysis of Skein", ASIACRYPT 2009, LNCS, vol. 5912, Springer, Tokyo, Japan, December 6-10, pp. 542-559, 2009.
- **S. Akleylek, B. B. Kırlar, Ö. Sever, Z. Yüce**, “Short Signature Scheme From Bilinear Pairings”, Western European Workshop on Research in Cryptology, Conference Proceedings, Graz, Avusturya 7-9 July, pp.57-60, 2009.
- **H. Abd. Rahman, A. Bahar, M. Khairul Bazli, N. Rosli, M. Salleh, G.-W. Weber**, “Levenberg-Marquardt Parameter Estimation of Stochastic Logistic Model”, in the proceedings of Joint Conference - Second International Conference and Workshops on Basic and Applied Sciences & Regional Annual Fundamental Science Seminar 2009, Johor Bahru, Malaysia, June 2-4, pp. 44-48, 2009.
- **A. Aydın, B. Karasözen**, “Semiexplicit Multisymplectic Integration of Nonlinear Schrödinger Equation”, in Further Progress in Analysis, Proceedings of the 6th International ISAAC Congress, Ankara, Turkey 13 - 18 August 2007, editors H.G.W. Begehr, A.O.Çelebi, R.P.Gilbert, pp. 717-726, 2009.
- **A. İřcanođlu, R. Korn, Ö. Uđur**, “Constant Proportion of Debt Obligations under the Geometric Brownian Asset Dynamics”, The Second International Conference on Social Sciences, ICSS 2009, İzmir, Turkey, September 10-11, pp. 139-152, 2009.
- **Ü. Ban, Ö. Çetinkaya, C.C. Küçüközmen**, “Distributional Properties of Energy Asset Returns”, The Second International Conference on Social Sciences, ICSS 2009, İzmir, Turkey, September 10-11, 2009.
- **S. Özögür-Akyüz, B. Akteke-Öztürk, T. Tchemisova, G.-W. Weber**, “New optimization methods in data mining, in Operations Research Proceedings”, Selected Papers of the Annual International Conference of the German Operations Research Society (GOR), University of Augsburg, Germany, September 3-5, 2008, B. Fleischmann, K.H. Borgwardt, R. Klein and A. Thuma, eds., Springer Verlag, pp. 527-532, 2009.
- **G.-W. Weber**, EURO XXIII 2009 Conference “OR Creating Competitive Advantage” and “Der Kongress tanzt” - Report about 23rd European Conference on Operational Research, July 5-8, 2009, in Bonn, Germany, in OR-News (German OR Society), 37, pp. 27-32, 2009.
- **A. M. Selçuk, H. Öktem**, “An improved method for inference of piecewise linear systems by detecting jumps using derivative estimation” Nonlinear Analysis: Hybrid Systems, 3, 3, Elsevier, Netherlands, pp. 277-287, 2009.
- **B. Karasözen, H. Öktem, M. Kahraman**, “A model of angiogenesis by hybrid systems with delay on the piecewise constant part” Journal of Process Control, 19, 8, Elsevier, Netherlands, 1257-1264, 2009.

ULUSLARARASI KONFERANSLARDA SUNUMLAR

- **D. Altıntan, Ö. Uđur**, “Generalized Multi-stage Variational Iteration Method”, in: The Eighth European Conference on Numerical Mathematics and Advanced Applications, ENUMATH 2009, , pp. 27, Uppsala, Sweden, June 29-July 3, 2009.
- **C.C. Küçüközmen, O. Toros**, “CAPM Performance and Volatility Structure of Energy Companies traded in Istanbul Stock Exchange” Second Multinational Energy and Value Conference, İstanbul, Turkey, July 2-5, 2009.
- **N.S. Aydın, C.C. Küçüközmen**, “Stress testing of energy-related derivative instruments based on conditional market risk models” Second Multinational Energy and Value Conference, İstanbul, Turkey, July 2-5, 2009.

- **Y.Y. Okur**, “A Malliavin calculus approach to general stochastic differential games with partial information” International Conference on Stochastic Analysis and Applications, Hammamet, Tunisia, October 12-16, 2009.
- **F. Yılmaz, B. Karasözen**, “Solving Distributed Optimal Control Problems for the Unsteady Burgers Equation” in COMSOL Multiphysics Proceedings of the COMSOL Conference, Milano, October 14-16, 2009.
- **H. Özadam, F. Özbudak**, “The Minimum Hamming Distance of Cyclic Codes of Length $2p^s$ ”, AAEECC 18, Applied Algebra, Algebraic algorithms, and Error correcting codes, Tarragona, June 8-12, 2009.
- **E. Kurtaran, F. Özbudak, Z. Saygi**, “A class of Authentication codes with secrecy”, WCC 2009, International Workshop on Coding and Cryptography, Ullenswag, May 10-15, 2009.
- **M. Cenk, Ç. K. Koç, F. Özbudak**, “Polynomial multiplication over finite fields using field extensions and interpolation”, 19th IEEE Symposium on Computer Arithmetic, ARITH 2009, Portland, Oregon, USA, 9-10 June 2009.
- **F. Özbudak**, “Artin-Schreier Type Curves and Quadratic Forms”, Kolloquium über Kombinatorik, Universität Magdeburg, Magdeburg, Germany, 13-14 November 2009.
- **B. B. Kırlar**, “On the elliptic curves $y^2=x^3-c$ with embedding degree one”, 14th International Congress on Computational and Applied Mathematics, ICCAM2009, Antalya, 29 September-2 October 2009.
- **Z. Volkovich, Z. Barzily, G.-W. Weber, D. Toledano-Kitai**, “Cluster Stability Estimation Based on a Minimal Spanning trees Approach”, Proceedings of the Second Global Conference on Power Control and Optimization, AIP Conference Proceedings 1159, Bali, Indonesia, 1-3 June 2009.
- **S. Özögür-Akyüz, G.-W. Weber**, “Infinite Kernel Learning by Infinite and Semi-infinite Programming”, Proceedings of the Second Global Conference on Power Control and Optimization, AIP Conference Proceedings 1159, Bali, Indonesia, 1-3 June 2009.
- **A. İřcanoglu, R. Korn, Ö. Uğur**, “Optimal leverage factor for the constant proportion debt obligations: a martingale approach”, The 23rd European Conference on Operational Research, EURO XXIII, Bonn, Germany, p. 300, July 5-8, 2009.
- **B. Senoglu, Ö.L. Gebizlioglu**, “Comparison of Some Value-at-Risk Estimation Methods for Two Parameter Weibull Loss Distribution”, 13th International Congress on Insurance Mathematics and Economics, İstanbul, 2009.
- **E. Kızılok, Ö.L. Gebizlioglu**, “FGM Copula Models for Bivariate Risks”, 13th International Congress on Insurance Mathematics and Economics, İstanbul, 2009.
- **S. Akleyek, B. B. Kırlar, Ö. Sever, Z. Yüce**, “Short Signature Scheme From Bilinear Pairings”, Western European Workshop on Research in Cryptology, Graz, Avusturya, 7-9 Temmuz 2009.
- **E. Kürüm, K. Yıldırak, G.-W. Weber**, “A Classification Problem of Credit Risk Rating Investigated and Solved by Optimization of the ROC Curve”, Nonlinear Analysis and Application - Nonlinear 09 (Conference of Memory of National Academy of Science of Ukraine Valery Sergeevich Melnik), Kiev, Ukraine, April 2-4, 2009.
- **G.-W. Weber, I. Batmaz, G. Köksal, F. Yerlikaya, P. Taylan, B. Akteke-Öztürk, A. Ömen, S. Özögür-Akyüz**, “New Contributions to Mathematical Data Mining: C-MARS and Infinite Kernel Learning”, Nonlinear Analysis and Applications - Nonlinear 09 (Conference of Memory of National Academy of Science of Ukraine Valery Sergeevich Melnik), Kiev, Ukraine, April 2-4, 2009.
- **S. Özögür-Akyüz, G.-W. Weber**, “Infinite kernel learning by infinite and semi-infinite programming”, Second Global Conference on Power and Optimization, PCO2009, Bali, Indonesia, June 1-3, 2009.
- **Z. Volkovich, Z. Barzily, G.-W. Weber, D. Toledano-Kitai**, “Cluster Stability Estimation Based on a Minimal Spanning Trees Approach”, Second Global Conference on Power and Optimization, PCO2009, Bali, Indonesia, June 1-3, 2009.
- **G.-W. Weber**, “9 Years EUROPT - EURO Working Group on Continuous Optimization, Second Global Conference on Power and Optimization”, PCO 2009, Bali, Indonesia, June 1-3, 2009.

- **G.-W. Weber, P. Taylan, E. Kürüm, K. Yıldırak**, “Two New Contributions to Financial Mathematics by Continuous Optimization”, 7th EUROPT Workshop “Advances in Continuous Optimization”, Remagen, Germany, July 3-4, 2009.
- **M.A. Lopez-Cerda, G.-W. Weber**, “9 Years EUROPT - EURO Working Group on Continuous Optimization”, 7th EUROPT Workshop “Advances in Continuous Optimization”, Remagen, Germany, July 3-4, 2009.
- **A. Gökmen, I. Gökmen, G.-W. Weber**, “Sustainable Living: Social, Economical, Ecological and World View”, A EURO ORD Workshop on OR for Developing Countries - Young Researchers and PhD Symposium Remagen, Germany, July 3-4, 2009.
- **G.-W. Weber**, “On Two New Contributions to Data Mining by and within of Modern Operations Research by Optimization Theory and Computational Statistics”, State-of-the-Art Workshop Related to EURO XXIII / EURO Working Groups OR for Development, Ethics, Decision making, Methodology of Societal Complexity and others, July 4, 2009.
- **E. Kalaycı, M. Aslan, G.-W. Weber, A. Belel Ismaila**, “Stochastic Portfolio Optimization in the Nigerian Electricity Sector”, EURO XXIII 2009, Bonn, Germany, July 5-8, 2009.
- **K. Yıldırak, E. Kürüm, G.-W. Weber**, “Modifying ROC Curve for Diagnostic Systems with more than Two Classes”, EURO XXIII 2009, Bonn, Germany, July 5-8, 2009.
- **G.-W. Weber, B. Akteke-Öztürk**, “Introduction into Operational Research and Its Mathematical Problems”, 4th International Summer School Achievements and Applications of Contemporary Informatics, Mathematics and Physics, National University of Technology of the Ukraine, Kiev, Ukraine, August 5-16, 2009.
- **B. Akteke-Öztürk, G.-W. Weber**, “Clustering Theory and Techniques”, 4th International Summer School Achievements and Applications of Contemporary Informatics, Mathematics and Physics, National University of Technology of the Ukraine, Kiev, Ukraine, August 5-16, 2009.
- **Z. Volkovich, Z. Barzily, G.-W. Weber, D. Toledano-Kitai**, “Clustering Theory - Cluster Number and Cluster Stability Estimation”, 4th International Summer School Achievements and Applications of Contemporary Informatics, Mathematics and Physics, National University of Technology of the Ukraine, Kiev, Ukraine, August 5-16, 2009.
- **S. Özögür-Akyüz, G.-W. Weber**, “Classification Theory Modelling of Kernel Machine by Infinite and Semi-Infinite Programming”, 4th International Summer School Achievements and Applications of Contemporary Informatics, Mathematics and Physics, National University of Technology of the Ukraine, Kiev, Ukraine, August 5-16, 2009.
- **G.-W. Weber, I. Batmaz, G. Köksal, F. Yerlikaya, P. Taylan, E. Kartal, E. Kürüm, A. Özmen**, “Regression Theory with Additive Models and CMARS”, 4th International Summer School Achievements and Applications of Contemporary Informatics, Mathematics and Physics, National University of Technology of the Ukraine, Kiev, Ukraine, August 5-16, 2009.
- **G.-W. Weber, B. Akteke-Öztürk**, “On Foundations of Continuous Optimization”, 4th International Summer School Achievements and Applications of Contemporary Informatics, Mathematics and Physics, National University of Technology of the Ukraine, Kiev, Ukraine, August 5-16, 2009.
- **B. Akteke-Öztürk, G.-W. Weber**, “Nonsmooth Optimization”, 4th International Summer School Achievements and Applications of Contemporary Informatics, Mathematics and Physics, National University of Technology of the Ukraine, Kiev, Ukraine, August 5-16, 2009.
- **G.-W. Weber, B. Akteke-Öztürk**, “Elements of Semi-Infinite and Robust Optimization”, 4th International Summer School Achievements and Applications of Contemporary Informatics, Mathematics and Physics, National University of Technology of the Ukraine, Kiev, Ukraine, August 5-16, 2009.
- **B. Akteke-Öztürk, G.-W. Weber**, “Quality Control and Improvement in Manufacturing”, 4th International Summer School Achievements and Applications of Contemporary Informatics, Mathematics and Physics, National University of Technology of the Ukraine, Kiev, Ukraine, August 5-16, 2009.

- **G.-W. Weber, V. Gafarova, N. Erbil, C.A. Gökçen, P. Taylan**, “Prediction of Financial Processes -Parameter Estimation in Stochastic Differential Equations by Continuous Optimization”, 4th International Summer School Achievements and Applications of Contemporary Informatics, Mathematics and Physics, National University of Technology of the Ukraine, Kiev, Ukraine, August 5-16, 2009.
- **G.-W. Weber, B. Akteke-Öztürk, Z. Alparslan-Gök, Ö. Ugur, H. Öktem, P. Taylan, E. Kropat, Ö. Defterli**, “Modelling, Dynamics and Development of Gene-Environment and Eco-Finance Networks”, 4th International Summer School Achievements and Applications of Contemporary Informatics, Mathematics and Physics, National University of Technology of the Ukraine, Kiev, Ukraine, August 5-16, 2009.
- **G.-W. Weber, K. Yıldırak, E. Kürüm**, “A classification problem of credit risk rating investigated and solved by optimization of the ROC Curve”, 14th International Congress on Computational and Applied Mathematics (ICCAM), Antalya, Turkey, September 29 – October 2, 2009.
- **B. Akteke-Özturk, G. Köksal, G.-W. Weber**, Nonsmooth Optimization of Desirability Functions by MSG Algorithm, EURO XXIII 2009, Bonn, Germany, July 5-8, 2009.
- **Ö. Türk, M. Tezer-Sezgin**, “FEM Solution of Diffusion-Convection-Reaction Equations in Air Pollution”, ENUMATH 2009, Uppsala, Sweden, June 29-July 3, 2009.
- **B. Karasözen**, “Numerical Methods for ode’s and pde’s with Poisson and Nambu Structure” J CECAM Workhop on Deterministic Themostats, Lausanne, Switzerland July 27-29- 2009.
- **B. Karasözen**, “Multilevel Derivative Free Optimization”, 7th EUROPT Workshop, Advances in Continuous Optimization, Remagen, Germany, July 3-4, 2009.
- **A. Aydın, B. Karasözen**, “Lobatto IIIA-IIIB Discretization for the Strongly Coupled Nonlinear Schrödinger Equation”, 23rd Biennial Numerical Conference, United Kingdom, June 23-26 2009.
- **F. Yılmaz, B. Karasözen**, “Solving distributed optimal control of unsteady Burgers equation in COMSOL Multiphysics”, COMSOL Conference, Milano, Italy, 14-16 October, 2009.
- **H. Yücel, B. Karasözen, F. Yılmaz, Z. Kanar**, “Distributed Optimal Control of unsteady Burgersand Convection Diffusion Reaction Equations using COMSOL Multiphysics”, ESF Workshop, Computational techniques for optimization problems subject to time-dependent PDEs, Sussex, England, December 14-16, 2009.
- **E.Yılmaz**, “Method of Lyapunov functions for differential equations with piecewise constant delay and its application to Neural networks model”, International Workshop on Resonance Oscillations and Stability of Nonsmooth Systems, London, England, 16-25 Haziran, 2009.
- **E.Yılmaz**, “Stability analysis of recurrent neural networks with deviated argument of mixed type,” 14th International Congress on Computational and Applied Mathematics (ICCAM2009), Antalya, 28 Eylül-2 Ekim 2009.
- **G.-W. Weber, N. Erbil, C.E. Can, V. Gafarova, A. Kerimov, P. Taylan**, “Parameter Estimation in Stochastic Differential Equations by Continuous Optimization”, 14th International Congress on Computational and Applied Mathematics (ICCAM), Antalya, September 29 – October 2, 2009.
- **S. Özogur-Akyüz, G. Üstünkar, G.-W. Weber**, “Numerical Optimization Methods for Infinite Kernel Learning”, 14th International Congress on Computational and Applied Mathematics (ICCAM), Antalya, Turkey, September 29 – October 2, 2009.
- **F. Yerlikaya Özkurt, G.-W. Weber, A. Özmen**, “Robustification of CMARS”, 14th International Congress on Computational and Applied Mathematics (ICCAM), Antalya, September 29 – October 2, 2009.
- **G. Ustunkar, S. Özogur-Akyuz, U. Sezerman, G.-W. Weber, N. Baykal**, “Application of Advanced Machine Learning Methods for Snp Discovery in Complex Disease Association Studies”, 14th International Congress on Computational and Applied Mathematics (ICCAM), Antalya, September 29 – October 2, 2009.
- **G.-W. Weber, E. Kropat, C.S. Pedamallu**, “Identification, Optimization and Dynamics of Regulatory Networks Under Uncertainty”, 14th International Congress on Computational and Applied Mathematics (ICCAM), Antalya, September 29 – October 2, 2009.

- **A. Aydın, B. Karasözen**, “Lobatto IIIA – IIIB discretization of Strongly Coupled Nonlinear Schrödinger Equation”, 14th International Conference on Computational and Applied Mathematics, Antalya, 28 September - 2 October, 2009.
- **F. Yılmaz, B. Karasözen**, “Solving Distributed Optimal Control of Unsteady Burgers Equation in COMSOL Multiphysics”, 14th International Conference on Computational and Applied Mathematics, Antalya, 28 September - 2 October, 2009.
- **G.-W. Weber, E. Kropat, Z. Alparslan-Gök**, “On Gene Pattern Prediction under Uncertainty”, HIBIT 2009 - 4th International Symposium on Health Informatics and Bioinformatics, Ankara, April 16-18, 2009.
- **B. Karasözen**, “From Numerical Analysis to Scientific Computing”, Workshop on Recent Developments in Applied Probability and Statistics, Ankara, 23-24 April 2009.
- **M. Tezer-Sezgin, S. Han Aydın, A.İ. Neslitürk**, “Solution of Navier-Stokes Equations using FEM with Stabizing Subgrid”, ENUMATH 2009, Uppsala, Sweden, June 29-July3, 2009.
- **H. Smith, C.S. Pedomallu, G.-W. Weber**, Report on “A EURO ORD Workshop on OR for Developing Countries - Young Researchers and PhD Symposium”, July 4, 2009, RheinAhr Campus, Remagen, Germany, in OR-News (German OR Society), November 2009.
- **G.-W. Weber**, On Research at Institute of Applied Mathematics, Middle East Technical University, Ankara, Turkey, Workshop: Middle East Technical University (METU) - Max Planck Institute (MPI) für Dynamik komplexer technischer Systeme Magdeburg, MPI Magdeburg, February 9, 2009.
- **G.-W. Weber**, On Research at Institute of Applied Mathematics, Middle East Technical University, Ankara, Turkey, Workshop: Middle East Technical University (METU) - Max Planck Institute (MPI) für Mathematik in den Naturwissenschaften, Leipzig, MPI Leipzig, February 10, 2009.
- **G.-W. Weber**, On Research at Institute of Applied Mathematics, Middle East Technical University, Ankara, Turkey, Workshop: Middle East Technical University (METU) - Max Planck Institute (MPI) Stuttgart, MPI for Metals Research, Stuttgart, Department of New Materials and Biosystems, Stuttgart, February 11, 2009.
- **G.-W. Weber**, 9 Years EUROPT - EURO Working Group on Continuous Optimization, presentation distributed at 4th International Summer School Achievements and Applications of Contemporary Informatics, Mathematics and Physics, National University of Technology of the Ukraine, Kiev, Ukraine, August 5-16, 2009.
- **G.-W. Weber, E. Kürüm, K. Yıldırak**, “Prediction of Credit Default by Continuous Optimization”, 4th International Summer School Achievements and Applications of Contemporary Informatics, Mathematics and Physics, National University of Technology of the Ukraine, Kiev, Ukraine, August 5-16, 2009.
- **G.-W. Weber, E. Kürüm, K. Yıldırak**, “A Classification Problem of Credit Risk Rating Investigated and Solved by Optimization of the ROC Curve”, Workshop on Recent Developments in Applied Probability and Statistics, Dedicated to the Memory of Professor Jürgen Lehn, April 23-24, 2009.
- **E. Kürüm, K. Yıldırak, G.-W. Weber**, “A Classification Problem of Credit Risk Rating Investigated and Solved by Optimization of the ROC Curve”, EURO XXIII 2009, Bonn, Germany, July 5-8, 2009.
- **F. Yerlikaya Özkurt, P. Taylan, I. Batmaz, G. Koksal, G.-W. Weber**, “A Modification of MARS by Tikhonov Regularization and Conic Quadratic Programming for Modeling Quality Data”, EURO XXIII 2009, Bonn, Germany, July 5-8, 2009.
- **P.C. Sekhar, L. Özdamar, G-W. Weber, E. Kropat**, “A System Dynamics Model for Intentional Transmission of HIV/AIDS”, A EURO ORD Workshop on OR for Developing Countries - Young Researchers and PhD Symposium Remagen, Germany, July 3-4, 2009.
- **S. Giebel, M. Rainer**, “Forecast of stock prices by using neural networks in comparison to log-normal estimation”, 4th. Statistical Days () Univ. Luxembourg, 1 , 1, Univ. Luxembourg, 22, 17-20 July 2009.
- **M. Rainer**, “Calibration of Ornstein-Uhlenbeck yield processes and dynamical control of short rate models”, Workshop on Recent Developments in Applied Probability and Statistics, IAM, METU Ankara, 30, 23-24 April 2009.

- **M. Rainer**, “Derivatives pricing in incomplete markets”, 23rd. EURO Conference on Operations Research, Bonn, 1, 1, EURO Soc., Germany, 19, 05-08 June 2009.
- **M. Rainer**, “On self-affine stable stochastic processes applied in solar physics”, IYA-2009 Int. Conference on Astronomy, Physics and Mathematics, Nakhchivan, 1, 1, IYA Soc. Azerbaijan, 17, 15-18 October 2009.
- **I. Erol, B.A. Özbakır**, “GIS-Based Spatial Analysis for the Determinants of REIT-Owned Commercial Property Rents in Istanbul Metropolitan Area”, AsRES-AREUEA Joint International Conference, U.S., July 11-14, 2009.
- **I. Erol, Ö. Çetinkaya**, “Originating Long-term Fixed-Rate Mortgages in Developing Economies: New Evidence from Turkey”, AsRES-AREUEA Joint International Conference, U.S., July 11-14, 2009.
- **I. Erol, D.Tırtıroğlu**, “Concentrated Ownership, No Dividend Payout Requirement, and the Capital Structure of REITs: Evidence from Turkey”, the Accounting & Finance Association of Australia and New Zealand (AFAANZ) Conference, Australia, July 5-7, 2009.

Yurtiçi Yayın	Yurtiçi Sunum	Editörlük
1	1	5

ULUSAL DERGİLERDE YAYINLAR

- **I. Erol, Ö. Çetinkaya**, “Originating Long-Term Fixed-Rate Mortgages in Developing Economies: New Evidence from Turkey” Metu Studies in Development, Aralık, 2009.

ULUSAL KONFERANSLARDA SUNUMLAR

- **B. Akteke Öztürk, G.-W. Weber, G. Köksal**, “Çekicilik Fonksiyonlarının Bileşke Fonksiyonları Olarak Çözümlemesi, Yöneylem Araştırması ve Endüstri Mühendisliği 29. Ulusal Kongresi (YA/EM 2009), 22-24 Temmuz, 2009, Ankara.

Editörlük

- **A. Dress, B. Karasözen, P.F. Stadler, G.-W. Weber**, “Networks in Computational Biology”, Special Issue of Discrete Applied Mathematics (DAM) 157, 10 (2009).
- **G.-W. Weber**, “Continuous Optimization in Finance”, special issue of Optimization 58, 3 (2009).
- **B. Karasözen, M. Türkay, L. T. Biegler, T.J. McAvoy**, Journal of Process Control, 19, 1217, 2009, Special Issue “Hybrid Systems: Modelling, Simulation, Optimization”.
- **D. DeTombe, G.-W. Weber**, State of the Art Workshop Societal Complexity 2009 EURO XXIII Conference Bonn, Germany, Europe, July 5, 2009.
- **U. Leopold-Wildburger, G.-W. Weber, M. Zachariassen (guest editors)**, “OR for Better Management of Sustainable Development”, special issue of European Journal of Operational Research 193, 3 (at the occasion of EURO XXI 2006), March 16, 2009.

ÇALIŞTAY/ SEMPOZYUM/ KONFERANS/ YAZOKULU

- **Workshop on Recent Advanced in Probability and Statistics on the Memory of Prof. Jürgen Lehn**, (Ankara, 23-24 Nisan 2009)
28 Eylül 2008’de vefat eden Darmstadt Technical Univeristy (DTÜ) Matematik Bölümü öğretim üyesi Prof. Dr. Jürgen Lehn’in anısına “Recent Developments in Applied Probability and Statistics“ başlıklı uluslararası bir çalıştay düzenlenmiştir. Çalıştayın amacı Prof. Dr.Lehn’in araştırma alanı olan Uygulamalı Olasılık ve İstatistik konularında çalışan bilim insanlarını bir araya getirmek ve bu konulardaki son gelişmeleri Türkiye’de paylaşmaktır. Bu çerçevede katkıda bulunmaları için Prof. Dr. Luc Devroye, Prof. Thomas Müller Gronbach, Prof. Ralf Korn, Prof. Volker Mammitzsch , Prof. Angelika May gibi Prof. Lehn ile yakın çalışmalarda bulunmuş olan bilim adamları davet edilmiş ve Türk bilim adamlarının da yer aldığı geniş bir katılım ile çalıştay gerçekleştirilmiştir. Oldenburg Üniversitesi öğretim üyesi Prof. Dr. Angelika May tarafından çalıştay öncesinde “Mathematics in Insurance” başlıklı seminer dizisi verilmiştir.

*Bu Preprintlerin listesi **Ek 1**’de verilmektedir.

ENSTİTÜ ÖĞRETİM ÜYELERİNİN ORGANİZASYONLARINDA BULUNDUKLARI ÇALIŞTAY/ SEMPOZYUM/ KONFERANS/ YAZOKULU

- **Ö.L. Gebizlioğlu**, 13th International Congress on Insurance Mathematics and Economics, İstanbul, 26-29 Mayıs 2009.
- **Ö.L. Gebizlioğlu**, 14th International Congress on Computational and Applied Mathematics, Antalya, 29 Eylül-2 Ekim 2009.
- **E. Akyıldız**, 14th International Congress on Computational and Applied Mathematics, Antalya, 29 Eylül-2 Ekim 2009.
- **G.W.Weber**, Member of Programme Committee of the conference Nonlinear Analysis and Applications (nonlinear 09) in memory of Professor Valeriy Melnik, National Technical University of Ukraine, Kiev, Ukraine, April 2-4, 2009.
- **G.W.Weber**, Member of Organizing Committee of HIBIT 2009 - 4th International Symposium on Health Informatics and Bioinformatics, Ankara, April 16-17, 2009.
- **G.W.Weber**, Member of Program Committee and member of Organizing Committee of Workshop on Recent Developments in Applied Probability and Statistics, Dedicated to the Memory of Professor Jürgen Lehn, METU, Ankara, April 23-24, 2009.
- **G.W.Weber**, Member of Program Committee and member of Organizing Committee (and session chair) of Workshop "Complex Systems - Theory and Applications in Sciences and Engineering", Ankara, May 14-15, 2009.
- **G.W.Weber**, Member of International Reviewers and Program Committee, and of Steering Committee of Second Global Conference on Power and Optimization - PCO2009, Bali, Indonesia, June 1-3, 2009.
- **G.W.Weber**, Member of International Scientific Committee of the 4th OCA, International Conference on Optimization and Control with Applications, Harbin and Wudalianchi, China, June 7-11, 2009.
- **G.W.Weber**, Member of Program Committee and member of Organizing Committee of 7th EUROPT Workshop "Advances in Continuous Optimization", University of Applied Sciences, Remagen, Germany, July 3-4, 2009.
- **G.W.Weber**, Member of Program Committee and member of Organizing Committee of A EURO ORD Workshop on OR for Developing Countries - Young Researchers and PhD Symposium, University of Applied Sciences, Remagen, July 4, 2009.
- **G.W.Weber**, Member of Organizing Committee of State-of-the-Art Workshop - Mutual session of special researchers of several Euro working groups OR for Development, Ethics, Decision Making, Methodology of Societal Complexity and others, University of Applied Sciences, Remagen, Germany, July 5, 2009.
- **G.W.Weber**, Member of Programme Committee and member of Organizing Committee of EURO XXIII 2009, Bonn, Germany, July 5-8, 2009.
- **G.W.Weber**, Member of Program Committee, and of Program Committee of the track "Applied Operations Research and Optimization" at 2009 IEEE-RIVF International Conference on Computing and Telecommunication Technologies - IEEE-RIVF 2009, Da Nang City, Vietnam, July 13-17, 2009.
- **G.W.Weber**, Member of International Programme Committee of 9th International Conference CASYS'09 on Computing Anticipatory Systems, Liege, Belgium, August 3-8, 2009.
- **G.W.Weber**, Member of Programme Committee of 4th Summer School "Achievements and Applications of Contemporary Informatics", Mathematics and Physics (AACIMP-09), National Technical University of Ukraine (KPI), Kiev, Ukraine, August 5-16, 2009.
- **G.W.Weber**, Member of International Steering Committee and member of International Programme Committee of EURO Mini Conference "Knowledge-Based Technologies and OR for Strategic Decisions of Sustainable Development", Vilnius, Lithuania, September 30 - October 3, 2009.

- **G.W.Weber**, Member of Organizing Committee and member of the Programme Committee of “14th International Congress on Computational and Applied Mathematics”, Antalya, September 29 - October 2, 2009.
- **B.Karasözen**, 14th International Congress on Computational and Applied Mathematics (ICCAM 2009), Antalya, 29. September – 2. October, 2009.
- **B.Karasözen**, Workshop on Recent Developments in Applied Probability and Statistics, Ankara, 23-24 April 2009.
- **B.Karasözen**, Complex Systems - Theory and Applications in Sciences and Engineering, METU, Institute of Applied Mathematics, Ankara, 23-24 May, 2009.
- **Z. Kalaylıođlu**, Member of Organizing Committee of Workshop on Recent Developments in Applied Probability and Statistics, Dedicated to the Memory of Professor Jürgen Lehn, METU, Ankara, April 23-24, 2009.

ARAŐTIRMA GRUPLARI

AÇIK ANAHTAR ALTYAPISI (AAA) ARAŐTIRMA GRUBU

Açık Anahtar Altyapısı (AAA) konusunda bilgi birikimi elde etmek ve yeni gelişmeler sunmak amacıyla üç temel grup olarak araştırma yapılmaktadır. Yazılım geliştirme grubu; algoritma geliştirme, analiz ve kodlama çalışmaları yapmaktadır, hukuki işler ve uygulama grubu; kullanılacak olan teknolojilerin hukuka ve kanunlara uygunluđunu arařtırmak ve konu ile ilgili çıkan yönetmelik ve tebliđleri takip etmek ve bunların projedeki uygulamaları ile ilgilenmektedir, altyapı ve sistem geliştirme grubu; proje içerisinde ihtiyaç duyulan altyapı ve sistem gereksinimlerini belirleyerek bu sistemlerin kurulumu ve güvenliđi ile ilgilenmektedir. (www.pki.iam.metu.edu.tr)

AKAN ŐİFRE SİSTEMLERİ ÇALIŐMA GRUBU

Akan Őifre Sistemleri Çalışma Grubunun araştırma alanları akan Őifre sistemlerinin test, tasarım ve analiz konularını içermektedir. Grup bu amaçla literatürde bilinen birçok akan Őifre sisteminin yanısıra, ECRYPT Stream Cipher Project’e sunulan birçok algoritmanın tasarımlarını incelemekte ve analizlerini yapmaktadır. Aynı zamanda akan Őifrelerin genel test yöntemleri ve tasarım kriterlerinin geliştirilmesi konularında da çalışmalar yapılmaktadır.

BOOLE FONKSİYONLARI ÇALIŐMA GRUBU

Bu grubun amacı, dengelilik, tam çıđ ölçütü (strict avalanche criterion), yüksek nonlineerite, yüksek cebirsel derece, yüksek mertebede korelasyon bađışıklığı ve yüksek mertebede propagation kriteri gibi konuları çalışmaktadır. Bu fonksiyonların tasarımında bütün bu karakteristikler hesaba katılmalıdır. Örneđin bükük fonksiyonlar (Bending functions) maksimum nonlineeriteye sahiptir ve sıfırdan farklı her vektör için propagation kriteri sağlar. Fakat bu fonksiyon sınıfı dengeli ve korelasyon bađışıklı deđildir. Boole fonksiyonları kriptografinin önemli bir alanı olmuştur. Shannon 1949 yılında modern kriptografinin temellerini attığında çarpım Őifrelerini ifade etmek için permütasyon ve yer deđiştirme olmak üzere iki temel dönüşüm kullanmıştır. Kullandığı her iki dönüşümde de Boole fonksiyonların kriptografik özellikleri sözkonusudur. Bundan sonraki süreçte kriptolojide Boole fonksiyonları S-kutuları tasarımında yaygın bir şekilde kullanılmıştır. Boole fonksiyonunun iyi olmasının ölçüsü kriptografik özellikleriyle doğru orantılıdır. (<http://www.math.metu.edu.tr/bfwg>)

DİNAMİK SİSTEMLER ARAŞTIRMA GRUBU

“Uygulamalı Dinamik Sistemler” araştırma grubu güncel matematiğin en faal alanlarından biri olan Dinamik Sistemler Teorisinin biyoloji, tıp, ekonomi ve finans gibi alanların problemlerine uygulamaları üzerine yoğunlaşmıştır. UME, Elektrik-Elektronik, Biyoloji, Matematik Bölümlerinden bazı öğretim üyelerinden oluşan bu grup modellerinde, fonksiyonel ve impulsive differensiyel denklemler kullanmakta ve somut problemlerin incelenmesinde çatallanma teorisi, merkez manifold teorisi gibi soyut teorilerden yararlanmaktadır. (<http://www.iam.metu.edu.tr/research>)

EUROPT OPTİMİZASYON ARAŞTIRMA GRUBU

Bu araştırma grubunun amacı, uluslararası işlevsel araştırma ve uygulamalı matematik çalışmalarını özellikle avrupa birliğindeki araştırmacılarla birlikte uluslararası düzeyde canlı tutmaktır. EUROPT Optimizasyon Araştırma Gurubu olarak popüler dergilerin özel sayılarına yayımlar hazırlanmış, birçok çalıştay düzenlenmiş, her düzeyde çeşitli bilimsel aktiviteler gerçekleştirilmiştir. Bunların dışında iki yeni EURO çalışma grubu ile çalışmalar devam etmekte ve 2003 yılından itibaren Uygulamalı Matematik Enstitüsü, EUROPT ve EURO Sürekli Optimizasyon çalışma grubuna ev sahipliği yapmaktadır. (<http://www.iam.metu.edu.tr/EUROPT/>)

FİNANSAL RİSK ARAŞTIRMA GRUBU

Finansal Risk Araştırma Grubu Türk finans sektöründe uygulama ve teoride karşılaşılan problemleri çözmek üzere 2003 yılında enstitümüz bünyesinde kurulmuş bir araştırma grubudur. Bu araştırma gurubu üniversite ile finans kurumlarının risk birimi çalışanlarını bir araya getirerek söz konusu problemlerin anlaşılmasını ve çözüm önerileri üretilmesini sağlamak amacıyla gütmektedir. (<http://www.iam.metu.edu.tr/research/groups/riskman.html>)

HESAPLAMALI BİYOLOJİ VE TIP ARAŞTIRMA GRUBU

Bu araştırma grubunda yer alan temel konular, gen ekspresyon motiflerinin modellenmesi ve tahmini, hesaplamalı insan metabolizması, beyin araştırmaları, kalp araştırmaları, populasyon dinamiği, gen dinamiği, gen değişimleri (populasyonların sınıflandırılması), sürdürülebilir gelişme, ve dünya ısısının kontrolüdür. Bu grup ODTÜ’de Biyoinformatik/Hesaplamalı Biyoloji üzerine **Bilim ve Teknolojileri YUUP Grubu** ile ortak çalışmaktadır. **YUUP araştırma grupları**’nda, biyoteknoloji, tıp ve biyoinformatik gibi araştırma konuları ile ilgili birçok temsilcisi bulunmaktadır. (<http://www.iam.metu.edu.tr/research/groups/compbio/index.html>)

HİBRİD SİSTEMLER ARAŞTIRMA GRUBU

“Development of Modeling and Optimization Tools for Hybrid Systems” NSF-TÜBİTAK INT ve “Modeling Multistationary Processes by Using Hybrid System Formulation: A study with priority on functional genomics” TÜBİTAK kariyer projesi çerçevesinde çalışmalar sürdürülmektedir. (<http://www.iam.metu.edu.tr/research/groups/hybrg/index.html>)

KODLAMA TEORİSİ ARAŞTIRMA GRUBU

Ana uygulamasının iletilerde oluşan hataların saptanması/düzeltilmesi olan hata düzeltici kodlar, özellikle otantikasyon kodlarıyla kriptografiye ve bilginin lineer olarak işlendiği başka alanlara da uygulanabilmektedirler. İyi parametrelere sahip kodların çok noktali cebirsel eğrilerden ve varyetelerden elde edildiği bilinmektedir. Bu araştırma grubunun ilgi alanları: iyi parametrelere sahip hata düzeltici kod inşası, sonlu cisimler üzerindeki cebirsel eğriler ve varyeteler, çok noktali eğriler inşası ve bu eğrilerden kodlar üretilmesi ve kodlama teorisinin kriptografiye uygulamaları sayılabilir. Ayrıca hata düzeltme kodları kullanılarak doğrulama kodlarının oluşturulması da amaçlanmaktadır.

OPTİMİZASYON TEORİSİ ARAŞTIRMA GRUBU

Bu araştırma grubu global, yarı-sonsuz değişkenli, türevsiz ve düzgün olmayan optimizasyon konularında çalışmalar yapmaktadır. (<http://www.iam.metu.edu.tr/EUROPT>)

TERS PROBLEMLER ARAŞTIRMA GRUBU

Grubun 2007 yılı çalışmaları, diğer grupların çalışmalarına ve projelerine destek şeklinde, ortaklaşa yürütülmüştür. (<http://www.iam.metu.edu.tr/research>)

YÜRÜTÜCÜLÜĞÜ YAPILAN PROJELER

- Projenin Adı:** Modeling Multistationary Processes by Using Hybrid System Formulation: A study with priority on functional genomics (TÜBİTAK 1001 Projesi)
Yürütücüsü: Hakan Öktem
Araştırmacıları: Nurgül Gökgöz, Mustafa Kahraman
Süresi: Haziran 2005 –Haziran 2010
Bütçesi: 162.400 TL
- Projenin Adı:** Sabit Faiz Oranlı Mortgage Kontratlarının Enflasyonist Ekonomilerde Fiyatlandırılması: Türkiye Örneği (TÜBİTAK 1001 Projesi)
Yürütücüsü: Işıl Erol
Araştırmacıları: Kasırga Yıldırak, Ömür Uğur
Süresi: 15 Ekim 2007 – 15 Ekim 2009
Bütçesi: 59.500 TL
- Projenin Adı:** Development of Modeling and Optimization Tools for Hybrid Systems, TÜBİTAK-NSF International Project (TBAG-U/114(104T253))
Yürütücüsü: Bülent Karasözen
Araştırmacıları: Hakan Öktem, Metin Turkey
Süresi: 1.5.2005- 31.4.2009
Bütçesi: 29.120 TL
- Projenin Adı:** DAAD Optimization: Theory, Methods and Applications Project
Yürütücüsü: Bülent Karasözen
Araştırmacıları: Gerhard Wilhelm Weber, Stefan Ulbrich
Süresi: 1.1.2008- 31.12.2011
Bütçesi: 40.000 Euro
- Projenin Adı:** Türkiye Morbidite Tablolarının Oluşturulması Aşama:I (TEKNOKENT Projesi)
Yöneticisi: Ersan Akyıldız
Yürütücüsü: Ömer L. Gebizlioğlu
Araştırmacıları: Sevtap Kestel, Burçak Başbuğ Erkan, Kasırga Yıldırak, Fatih Tank, Zeynep Kalaylıoğlu, Sarp Üner, Hatice Anar, Büşra Yılmaz, Derya Uygun
Süresi: 01.05.2009-30.06.2010
Bütçesi: 343.000 TL
- Proje Adı:** Birincil ve İkincil Mortgage Piyasaları ve Mortgage Kontraları Fiyatlandırılması Konusunda Danışmanlık ve Eğitim Hizmetleri”(Döner Sermaye Projesi)
Yürütücüsü: Işıl Erol
Süresi: 05.06.2009-19.12.2009
Bütçesi: 30.046 TL

Proje Adı: Eşleme-Tabanlı Kripto Sistemleri Araştırma Geliştirme Projesi
Yürütücüsü: Ersan Akyıldız
Süresi: 01.12.2008-30.06.2009
Bütçesi: 30.000 USD

Proje Adı: Kompleks Faiz Türevlerinin Fiyatlandırılması için LIBOR Market Modeli Simulasyonu Prototipinin Geliştirilmesi (Development of a First Prototype of a LOBOR market Simulation for Valuation (pricing) of Complex Interest Rate Derivatives) (Döner Sermaye Projesi)
Yürütücüsü: Ömür Uğur
Araştırmacıları: Martin Rainer
Süresi: 01.12.2009-31.03.2010
Bütçesi: 10.150 Euro

Proje Adı: Özet Fonksiyonların Güvenlik Ölçütleri ve Analiz Metotları Geliştirme ve Uygulama Projesi (TÜBİTAK1001 Projesi)
Yürütücüsü: A. Emrah Çakçak
Araştırmacıları: Fatih Sulak, Begül Bilgin, Erdener Uyan, Çağdaş Çalık
Süresi: 01.03.2009-01.03.2010
Bütçesi: 44.100 TL

ODTÜ-BİLİMSEL ARAŞTIRMA PROJELERİ

Projenin Adı: Kartezyen Hesaplama Ağı Üreticisi Geliştirilmesi (BAP-2007-07-05-03)
Yürütücüsü: Mehmet Haluk Aksel
Araştırmacıları: Bülent Karasözen
Süresi: 1 Ocak 2007-31 Aralık 2009
Bütçesi: 6.635 TL

Projenin Adı: Çok Katmanlı Eniyileme Problemlerinin Türev Gerektirmeyen Yöntemlerle Çözümü (BAP-07.05.2009.01)
Yürütücüsü: Bülent Karasözen
Araştırmacıları: Y. Uludağ, Bengisen Pekmen, Hamdullah Yücel
Süresi: 1 Ocak 2009-31 Aralık 2009
Bütçesi: 4.000 TL

Projenin Adı: Bayesian Unit Root Test in Stochastic Volatility Models with Correlated Errors and Autoregressive Model of Order p (BAP-07.05.2009.03)
Yürütücüsü: Zeynep Işıl Kalaylıoğlu
Araştırmacıları: Kasırga Yıldırak, Burak Bozdemir
Süresi: 1 Ocak 2009-31 Aralık 2009
Bütçesi: 6.500 TL

Projenin Adı: Finite Geometry, Coding Theory and Cryptography (BAP-07.05.2009.03)
Yürütücüsü: Ferruh Özbudak
Araştırmacıları: Emrah Çakçak, Adnen Sboui, Burcu Gülmez, Murat Cenk, Kerem Kaşkaloğlu
Süresi: 1 Ocak 2009-31 Aralık 2009
Bütçesi: 10.000 TL

Projenin Adı: A Classification Problem of Credit Risk Rating Investigated and Solved by New Methods of Statistical Learning and Optimization (BAP-07.05.2009.04)
Yürütücüsü: Gerhard Wilhelm Weber
Araştırmacıları: B. Burçak Başbuğ Erkan, Işıl Erol, Azize Hayfavi, Kasırga Yıldırak, Efsun Kürüm, Vefa Gafarova
Süresi: 1 Ocak 2009-31 Aralık 2009
Bütçesi: 4.000 TL

Projenin Adı: Parameter Estimation for Actuarial Sciences and Financial Mathematics in Stochastic Differential Equations by Additive and Nonlinear Models and Continuous Optimization (BAP-07.05.2009.05)
Yürütücüsü: Gerhard Wilhelm Weber
Araştırmacıları: B. Burçak Başbuğ Erkan, Işıl Erol, Kasırga Yıldırak, Pakize Taylan, M.Burak Bozdemir, Efsun Kürüm, Vefa Gafarova
Süresi: 1 Ocak 2009-31 Aralık 2009
Bütçesi: 5.000 TL

Projenin Adı: Stochastic Models for Pricing and Hedging Derivatives in Incomplete Markets: Structure, Calibration, Dynamical Programming, Risk Optimization (BAP-07.05.2009.06)
Yürütücüsü: Martin Rainer
Süresi: 1 Ocak 2009-31 Aralık 2009
Bütçesi: 2.000 TL

ODTÜ-BİLİMSEL ARAŞTIRMA TEZ PROJELERİ

Projenin Adı: İstatistik ve Veri Madenciliğinde Karşılaşılan Genelleştirilmiş Modellerin Eniyileme ve Ters Problemler Yöntemleriyle Çözümü (BAP-07.05.2009.00.01)
Yürütücüsü: Gerhard Wilhelm Weber
Araştırmacıları: B. Karasözen, Gül Çelik, Belgin Kayhan
Süresi: 1 Ocak 2009-31 Aralık 2009
Bütçesi: 3.000 TL

Projenin Adı: Sinir Ağlarının Kompleks Dinamiği (BAP-08-07-05-00-03)
Yürütücüsü: Marat Akhmet
Araştırmacıları: Enes Yılmaz
Süresi: 1 Ocak 2008-31 Aralık 2011
Bütçesi : 1.500 TL

ENSTİTÜ BAĞLANTILI ÖĞRETİM ÜYELERİNİN ARAŞTIRMACI OLARAK KATILDIKLARI PROJELER

Projenin Adı: Kalite İyileştirmede Veri Madenciliği Kullanımı ve Geliştirilmesi (TÜBİTAK 105M138)
Yürütücüsü: G. Köksal (Endüstri Mühendisliği)
Araştırmacıları: Nur Evin Özdemirel, Sinan Kayalığıl, Gerhard Wilhelm Weber, Bülent Karasözen, İnci Batmaz, Murat Caner Testik, Berna Bakır, Başak Öztürk, İlker Arif İpekçi, Fatma Güntürkün, Fatma Yerlikaya, Elçin Kartal, Dilber Ayhan, Barış Yenidünya, Zeynep Anaklı, Gizem Özer, Tuna Kılıç, Özlem Türker
Süresi: 1 Mayıs 2006-30 Haziran 2009
Bütçesi: 185.230 TL

Projenin Adı: Balaban Valley Project Sürekli Optimizasyon Yöntemleri ve Uygulamaları
Yürütücüsü: A. Gökmen
Araştırmacıları: S. Kayalığıl, G. W. Weber, İ. Gökmen, M. Ecevit, A. Sürmeli, T. Bali, Y. Ecevit, H. Gökmen, D. J. DeTombe
Süresi: 2004-...

Projenin Adı: Ankara'daki Genç Sağlık Ara Elemanlarının İstihdamı-SAĞLIKEL
Sözleşme Numarası : CFCU/TR0602.03-02/647
Koordinatör: Aytekin Cıvık, Gazi Üniversitesi
Koordinatör Yardımcısı: Enes Yılmaz
Süresi: 1 Aralık 2008-30 Kasım 2009
Bütçesi: 231.291.20 €

ÖĞRETİM ÜYESİ YETİŞTİRME PROGRAMI (ÖYP) PROJELERİ

Danışmanı: Ömür Uğur
Öğrencinin Adı: Ayşegül İşcanoğlu
Üniversitesi: Selçuk Üniversitesi, KONYA
Bütçesi: 1.2210 TL

Danışmanı: Ömür Uğur
Öğrencinin Adı: Derya Altıntan
Üniversitesi: Selçuk Üniversitesi, KONYA
Bütçesi: 2.463 TL

Danışmanı: Gerhard W. Weber
Öğrencinin Adı: Nüket Erbil
Üniversitesi: Fırat Üniversitesi, ELAZIĞ
Bütçesi: 1.665 TL

Danışmanı: Ersan Akyıldız
Öğrencinin Adı: Barış Bülent Kırklar
Üniversitesi: Süleyman Demirel Üniversitesi, ISPARTA
Bütçesi: 2.282 TL

Danışmanı: G. Wilhelm Weber
Öğrencinin Adı: S. Zeynep Alparslan
Üniversitesi: Süleyman Demirel Üniversitesi, ISPARTA
Bütçesi: 755 TL

Danışmanı: Melek D. Yücel
Öğrencinin Adı: Sedat Akleylek
Üniversitesi: Ondokuz Mayıs Üniversitesi, SAMSUN
Bütçesi: 1.789 TL

Danışmanı: Ersan Akyıldız
Öğrencinin Adı: Turgut Hanoyamak
Üniversitesi: Yüzüncü Yıl Üniversitesi, VAN
Bütçesi: 1.868 TL

Danışmanı: Melek D. Yücel
Öğrencinin Adı: Rita İsmailova
Üniversitesi: Kırgız Türkiye Manas Üniversitesi, KIRGIZİSTAN
Bütçesi: 1.673 TL

Danışmanı: Prof. Dr. Bülent Karasözen
Öğrencinin Adı: Ayşe Sarıaydın
Üniversitesi: Yüzüncü Yıl Üniversitesi, VAN
Bütçesi: 1.886 TL

DİĞER FAALİYETLER

ENSTİTÜ TARAFINDAN DÜZENLENEN KISA SÜRELİ KURSLAR/ SEMİNERLER

- **Dr. Stefan Giebel**, (Technische Universität Braunschweig), “Application of Neural Networks for Characteristic Shapes in Medicine, Target Groups: Mathematics, Engineering, Medicine”, “Comparison of Neural Networks and Configuration Frequency Analysis for Pattern Analysis in Criminology”, “Forecasting of Stochastic Market Prices via Neural Networks” December 17- 23, 2009.
- **Dr. Zuzana Oplatková**, (Tomas Bata University in Zlin, Faculty of Applied Informatics Zlín, Czech Republic) “Symbolic regression: principles and applications”, “Evolutionary algorithms: principles and applications”, “Neural networks: principles and applications” November 9-13, 2009.
- **Dr. Vadim Strijov**, (Computer Center of Russian Academy of Sciences, Moscow), “Analysis of regression model parameters”, “Methods of model selection and dimensionality reduction”, “Model Generation and its Application in Financial Sector” October 5-9, 2009.
- **Doç. Dr. M. Rodica Branzei** (Alexandru Ioan Cuza University, Romania), **Prof. Dr. Stef Tijs**, (Tilburg University, Netherlands) Monotonicity properties of interval solutions for convex interval games”, “Peer Group Situations and Games” “Approximate Solutions for Multi-Criteria Situations via Improvement Sets” January 23- February 4, 2009

ENSTİTÜMÜZÜ KISA SÜRELİ ZİYARET EDENLER

- **Doç. Dr. M. Rodica Branzei** (Alexandru Ioan Cuza University, Romania), 23 Ocak- 4 Şubat 2009.
- **Prof. Dr. Stef Tijs** (Tilburg University, Netherlands), 23 Ocak- 4 Şubat, 2009.
- **Prof. Dr. John Shawe-Taylor** (University College London (UCL),UK) 6 Şubat 2009.
- **Prof. Dr. Sencer Yeralan**, (University of Florida, Gainesville, USA) 24 Şubat, 2009.
- **Prof. Dr. Vasiliy Belozyorov** (Dnepropetrovsk State University, Ukraine), 06-20 Mart 2009.
- **Dr. Ceren Vardar** (Department of Mathematics and Statistics, Bowling Green State University), 27 Mart 2009.
- **Suna Özyüksel Oksay** (Türk Sigorta Enstitüsü Vakfı Başkanı), 10 Nisan 2009.
- **Doç. Dr. Sevtap Kestel** (Albert Ludwigs University Freiburg, Faculty of Economics), 14 Nisan 2009.
- **Prof. Dr. Angelika May** (Carl von Ossietzky Univ. of Oldenburg, Germany), 22 Nisan 2009.
- **Orhan Coşkun** (REUTERS), 8 Mayıs 2009.
- **Prof. Dr. Kristina Schmücker** (Max Planck Society, Munich, Germany), 15 Mayıs 2009.
- **Prof. Dr. Sujit K. Ghosh** NC State University (Amerika), 18-28 Mayıs 2009
- **Dr. Patrick Sole** (CNRS-I3S, ESSI), 05 Ekim 2009.
- **Dr. Winnie Li** (Dept. of Mathematics, The Pennsylvania State University), 05 Ekim 2009.
- **Dr. Vadim Strijov** (Computer Center of Russian Academy of Sci., Moscow), 5-9 Ekim 2009.
- **Dr. Zuzana Oplatková** (Tomas Bata University in Zlin, Faculty of Applied Informatics Zlín, Czech Republic), 9-13 Ekim 2009.
- **Turan Paksoy, Eren Özceylan, Nimet Pehlivan** (Selçuk University, Department of Industrial Engineering), 20 Kasım 2009.
- **Dr. Stefan Giebel** (Technische Universität Braunschweig), 17- 23 Aralık 2009.
- **Ayşegül Birand** (University of Tennessee, Department of Ecology & Evolutionary Biology), 24 Aralık 2009.

ENSTİTÜ ÜYELERİNİN KISA SÜRELİ YURT DIŞI ZİYARETLERİ

- **Sedat Akleylek**, İsviçre ve Belçika teknik gezi, 5-16 Eylül 2009.
- **Çağdaş Çalık**, İsviçre ve Belçika teknik gezi, 5-16 Eylül 2009.
- **Turgut Hanoyamak**, Summer School on Provable Security, Barselona, İspanya, 7-11 Eylül 2009.
- **Ayşe Sarıaydın**, Max-Planck Enstitüsü, Almanya, 14 Eylül-11 Aralık 2009.
- **Ersan Akyıldız**, Kaiserslautern ve Berlin Üniversiteleri, Matematik Bölümleri, Almanya, 20-27 Temmuz 2009.
- **Serkan Zeytun**, Kaiserslautern Üniversitesi Almanya, 21 Temmuz-20 Ağustos 2009.
- **Ersan Akyıldız**, EMRCM/CREMMA, Tunus, 26 Haziran 2009.
- **G.-W. Weber**, Participation at CREMMA Meeting, Visit at El Manar University, Tunis, Tunia, June 26, 2009.
- **Derya Altıntan**, Karlsruhe Üniversitesi, Almanya, 20 Nisan 2009-20 Mart 2010.
- **Derya Altıntan**, Karlsruhe Üniversitesi, Almanya, 7-22 Mart 2009.
- **Derya Altıntan**, “Enumath 2009”, İsveç, 3 Haziran-29 Temmuz 2009.
- **Ayşegül İşcanoğlu Çekiç**, 2. International Conferenc on Social Sciences, İzmir, 10-11 Eylül 2009.
- **Ayşegül İşcanoğlu Çekiç**, 23rd European Conference on Operational Research (EURO XII), Almanya, 5-8 Temmuz 2009.

ENSTİTÜ DESTEKLİ KONFERANS KATILIMLARI

- **Hamdullah Yücel**, “Hierarchical Matrices”, Leipzig Max-Planck Enstitüsü Almanya, 2-6 Mart 2009.
- **Enes Yılmaz**, “Innovative Approaches to University & Small and Medium Enterprises (SMEs)” Siauliai Üniversitesi (Litvanya) 19-20 Mart 2009.
- **Adnen Sboui**, “AGCT-12 Arithmetic, Geometry, Cryptography and Coding Theory”, Fransa, 25 Mart-3 Nisan 2009.
- **Ferruh Özbudak**, “AGCT-12 Arithmetic, Geometry, Cryptography and Coding Theory”, Fransa, 30 Mart-3 Nisan 2009.
- **Azize Hayfavi**, “5th Conference of the Eastern Mediterranean Region of the International Biometric Society” (IBS-EMR), İstanbul, 10-14 Mayıs 2009.
- **Zeynep Kalayhoğlu**, “5th Conference of the Eastern Mediterranean Region of the International Biometric Society” (IBS-EMR), İstanbul 10-14 Mayıs 2009.
- **Emrah Çakçak**, “Antalya Cebir Günleri Konferansı”, Antalya 20-24 Mayıs 2009.
- **Adnen Sboui**, “Galois Geometries and Applications 2009”, Belçika, 25-29 Mayıs 2009.
- **B.Burçak Başbuğ Erkan**, “13th International Congress on Insurance: Mathematics and Economics” (IME2009) İstanbul, 26-28 Mayıs 2009.
- **Gerhard W. Weber**, “Second Global Conference on Power and Optimization-PCO2009” Endonezya, 1-3 Haziran 2009.
- **Derya Altıntan**, “Enumath 2009”, İsveç, 3 Haziran-29 Temmuz 2009.
- **Cihangir Tezcan**, “Gizli Anahtarlı Sistemlerin Kriptanalizi”, UEKAE-TÜBİTAK Gebze, 15-20 Haziran 2009.
- **Enes Yılmaz**, “Resonance Oscillations and Stability of Nonsmooth Systems”, İngiltere, 16-25 Haziran 2009.
- **Emrah Çakçak**, Universite Toulon-Var, Groupe de Recherche en Informatique et Mathematiques (GRIM), Fransa, 22 Haziran-20 Temmuz 2009.
- **Gerhard W. Weber**, Tunus, 25-26 Haziran 2009.
- **Gerhard W. Weber**, Almanya, 3-8 Temmuz 2009.
- **Martin Rainer**, “23rd European Conference on Operational Research” (EURO XII), Almanya 5-8 Temmuz 2009.
- **Kasırğa Yıldırak**, “23rd European Conference on Operational Research” (EURO XII), Almanya, 5-8 Temmuz 2009.

- **Ayşegül İşcanoğlu Çekiç**, “23rd European Conference on Operational Research” (EURO XII), Almanya 5-8 Temmuz 2009.
- **Bülent Karasözen**, “CECAM Workshop”, İsviçre, 27-29 Temmuz 2009.
- **Sedat Akleylek**, “Workshop on Fault Diagnosis and Tolerance in Cryptography 2009”, “Workshop on Cryptographic Hardware and Embedded Systems 2009”, “Special-purpose Hardware for Attacking Cryptographic Systems” İsviçre, 6-10 Eylül 2009.
- **Çağdaş Çalık**, “Workshop on Fault Diagnosis and Tolerance in Cryptography 2009”, “Workshop on Cryptographic Hardware and Embedded Systems 2009”, “Special-purpose Hardware for Attacking Cryptographic Systems” İsviçre, 6-10 Eylül 2009.
- **Sedat Akleylek**, “ECRYPT II Workshop on Cryptology: Progress and Challenges” Belçika, 14 Eylül 2009.
- **Çağdaş Çalık**, “ECRYPT II Workshop on Cryptology: Progress and Challenges” Belçika, 14 Eylül 2009.
- **Sedat Akleylek**, “Workshop on Sequences, Codes and Curves”, Antalya, 25-29 Eylül 2009.
- **Oğuz Yayla**, “Workshop on Sequences, Codes and Curves”, Antalya, 25-29 Eylül 2009.
- **Hakan Özadam**, “Workshop on Sequences, Codes and Curves”, Antalya, 25-29 Eylül 2009.
- **Bülent Karasözen**, “Comsol Conference 2009” Milano İtalya, 14-16 Ekim 2009.
- **Martin Rainer**, “International Conference on Astronomy, Physics and Mathematics”, Azerbaycan, 15-18 Ekim 2009.
- **Marat Akhmet**, “Recent Advances in Mathematical Sciences and Applications”, Hindistan, 19-22 Aralık 2009.

EKLER

EK: 1
IAM PREPRINT SERİSİ

IAM PREPRINT SERIES

No	Title Abstract	Author	Date
129	On Numerical Optimization Theory of Infinite Kernel Learning	S. Özögür-Akyüz, G. -W. Weber	21.01.2009
130	The Interval Shapley Value: An Axiomatization	S. Z. Alparslan Gök, R. Branzei, S. Tijs	03.02.2009
131	Hopfield-type neural networks systems with piecewise constant argument	M. Akhmet, E. Yılmaz	19.02.2009
132	A Review on Data Mining and Continuous Optimization Applications in Computational Biology and Medicine	G. -W. Weber, S. Özögür-Akyüz, E. Kropat	12.03.2009
133	An explicit formula for the number of points of the elliptic curve $y^2=x^3-k$ over the finite field F_p	B. B. Kırlar	16.03.2009
134	Non-linear Longitudinal Compression of Short Laser Pulses in the Atmosphere	B. Yedierler	18.03.2009
135	Stability analysis of recurrent neural networks with deviated argument of mixed type	M. Akhmet, D. Aruğaslan, E. Yılmaz	24.03.2009
136	Levenberg-Marquardt Parameter Estimation of Stochastic Logistic Model	H. A.Rahman, A. Bahar, M.K. Bazli, N. Rosli, M. Salleh, G.-W. Weber	06.04.2009
137	A remark on the generalized Konstant-Macdonald identity and a smoothness condition for Schubert varieties in G/B	E. Akyıldız, J.B. Carrell	09.04.2009
138	Regulatory Networks under Ellipsoidal Uncertainty-Optimization Theory and Dynamical Systems	E. Kropat, G.-W. Weber, P. C. Sekhar	04.05.2009
139	On the Convexity of Interval Dominance Cores	R. Branzei, S. Z. Alparslan Gök	31.05.2009
140	Generate the subset of discrete trajectories with best profits in polynomial time	S. V. Shchepalov	17.06.2009
141	A System Dynamics Model for Intentional Transmission of HIV/AIDS using Cross Impact Analysis	P. C. Sekhar, L. Ozdamar, E. Kropat, G. -W. Weber	05.08.2009
142	A Classification Problem of Credit Risk Rating Investigated and Solved by Optimization of the ROC Curve	E. Kürüm, K. Yildirak, G.-W. Weber	15.08.2009
143	A Minimal Spanning Trees Approach to Cluster Stability Problem	Z. Volkovich, Z. Barzily, G.-W. Weber, D. Toledano-Kitay, R. Avros	28.08.2009
144	CMARS: A New Contribution to Nonparametric Regression with Multivariate Adaptive Regression Splines Supported by Continuous Optimisation	G.-W. Weber, İ. Batmaz, G. Köksal, P. Taylan, F. Yerlikaya-Özkurt	10.09.2009
145	On an Adjacency Cluster Merit	Z. Volkovich, G. -W. Weber, R. Avros	19.09.2009
146	A System Dynamics Model to Study the Importance of Infrastructure Facilities on Quality of Primary Education System in Developing Countries	P. C. Sekhar, L. Ozdamar, G. -W. Weber, E. Kropat	24.09.2009
147	Model Selection of Infinite Kernel Learning via Observed Margin	S. Özögür-Akyüz, G. Üstünkar, G. -W. Weber	27.09.2009
148	Cooperative games under ellipsoidal uncertainty	S. Z. Alparslan Gök, G. -W. Weber	27.09.2009
149	Nonlinear Regression Model Generation Using Hyperparameters Optimization	V. Strijov, G. -W. Weber	02.10.2009
150	A Multi-Objective Mixed Integer Programming Model For Multi Echelon Supply Chain Network Design and Optimization	T. Paksoy, E. Özceylan, G. -W. Weber	14.10.2009
151	Fuzzy Optimization of A Multi Stage Multi Item Closed-Loop Flexible Supply Chain Network Under Fuzzy Material Requirement Constraints	T. Paksoy, N. Y. Pehlivan, E. Özceylan, G. -W. Weber	14.10.2009
152	Modeling Facility Location and Supplier Selection with Supplier's Product Quality and Contract Fee for a Strategic Supply Chain Design	T. Paksoy, E. Özceylan, G. -W. Weber	21.10.2009

153	New Discretization and Optimization Techniques with Results in the Dynamics of Gene-Environment Networks	O. Defterli, A. Fügenschuh, G. – W. Weber	03.11.2009
154	Optimization of Desirability Functions as a DNLP Model by GAMS/BARON	B. A. Ozturk, G. Koksal, G. –W. Weber	03.11.2009
155	A Multi Objective Model for Optimization of a Green Supply Chain Network	T. Paksoy, E. Özceylan, G. –W. Weber	10.11.2009
156	Evaluating the CMARS Performance for Modeling Nonlinearities	İ. Batmaz, F. Yerlikaya-Özkurt, E. Kartal-Koç, G. Köksal, G. –W. Weber	17.11.2009
157	Regression Analysis for Clusters in Gene-Environment Networks based on Ellipsoidal Calculus and Optimization	E. Kropat, G. –W. Weber, J. -J. Rückmann	19.11.2009
158	A Review on the State of the Energy Sector of Turkey from the Perspective of Operational Research - An Invitation by OR	E. Özceylan, T. Paksoy, E. Rosario, E. Kropat, G. –W. Weber	11.12.2009
159	CMARS and GAM & CQP- Modern Optimization Methods Applied to International Credit Default Prediction	Ö. Sezgin-Alp, E. Büyükbebeci, A. İşcanoğlu-Çekiç, F. Yerlikaya-Özkurt, P. Taylan, G. –W. Weber	25.12.2009

EK: 2
UME SEMİNERLERİ

Genel Seminerler

Some Results on Permutation Polynomials	Ayça Çesmeliöđlu (Sabancı Üniversitesi)	29.12.2009
Forecasting of Stochastic Market Prices via Neural Networks	Stefan Giebel (Technische Universität Braunschweig [1])	22.12.2009
Optimal Stopping for Perpetual American Warrant in Discrete Time	Mustafa Ç. Pınar (Industrial Engineering Bilkent University)	08.12.2009
Sigorta ve aktüerin sigorta sektöründeki rolü	Serap Oguz Gonulal (Senior Insurance Specialist)	02.12.2009
Applications of Clifford (Geometric) Algebras to Kinematics	Gokhan Kiper (METU, Department of Mechanical Engineering)	24.11.2009
SDE Solutions in the Space of Smooth Random Variables	Yeliz Yolcu Okur (UME)	17.11.2009
Evolutionary algorithms: principles and applications	Zuzana Oplatková (Tomas Bata University in Zlin, Faculty of Applied Informatics Zlín, Czech Republic)	10.11.2009
Methods of model selection and dimensionality reduction	Vadim Strijov (Computer Center of Russian Academy of Sciences, Moscow)	07.10.2009
Reserve estimation of Non-Life Insurance Claims in Turkey	Sevtap Kestel (Albert Ludwigs University Freiburg, Faculty of Economics)	14.04.2009
Sustainability	Canan Özgen (Department of Chemical Engineering, METU)	31.03.2009
Two-dimensional radiative gas-dynamic model for a continuous optical discharge in a gas flow	Ismail Rafatov (Department of Physics, METU)	24.03.2009
On self-affine and stable processes and applications	Martin Rainer (UME)	17.03.2009
3D Object Recognition Using Transform and Scale Invariant 3D Features	İlkay Ulusoy (EE Eng. Department, METU)	03.03.2009
A Generalized Activity Network Model for Sustainable Systems Engineering	Sencer Yeralan (METU University of Florida, Gainesville, USA)	24.02.2009
Monotonicity properties of interval solutions for convex interval games	Rodica Branzei (Alexandru Ioan Cuza University, Iași-Romania)	03.02.2009
Aggregate Monotonic Core Selections For Cooperative Games	Stef Tijs (Tilburg University, The Netherlands)	27.01.2009

Yaşam ve İnsan Bilimleri ve Ekonomi Alanında Uygulamalı Matematik Seminerleri

On the origin of species through mathematical models and computer simulations	Ayşegül Birand (University of Tennessee, Department of Ecology & Evolutionary Biology)	24.12.2009
Application of Neural Networks for Characteristic Shapes in Medicine Target Groups: Mathematics, Engineering, Medicine	Stefan Giebel (Technische Universität Braunschweig)	18.12.2009
Comparison of Neural Networks and Configuration Frequency Analysis for Pattern Analysis in Criminology	Stefan Giebel (Technische Universität Braunschweig)	17.12.2009
Supply chain network design and optimization	Turan PAKSOY, Eren ÖZCEYLAN (Selçuk University, Department of Industrial	20.11.2009

	Engineering)	
Symbolic regression: principles and applications	Zuzana Oplatková (Tomas Bata University in Zlin, Faculty of Applied Informatics Zlín, Czech Republic)	13.11.2009
Robustification of Newly Developed CMARS Method The New Robust CMARS (RCMARS) Method	Gerhard-W. Weber, Fatma Yelikaya-Özkurt, Ayse Özmen, Inci Batmaz	30.10.2009
On Robust Portfolio Optimization	Gerhard-Wilhelm Weber (UME)	23.10.2009
Analysis of regression model parameters	Vadim Strijov (Computer Center of Russian Academy of Sciences, Moscow)	09.10.2009
Cluster stability estimation based on a minimal spanning trees approach	Gerhard-Wilhelm Weber (UME)	29.05.2009
Some New Contributions of Continuous Optimization Theory in the Financial Sector and Related Areas	Gerhard-Wilhelm Weber (UME)	19.05.2009
Discrete Tomography I	Gerhard-Wilhelm Weber (UME)	10.04.2009
A study on the correlation of the supremum and the infimum of standard Brownian motion and Brownian motion with drift and on the correlation of the maximum gain and maximum loss of Brownian motion with drift	Ceren Vardar (Department of Mathematics and Statistics, Bowling Green State University)	27.03.2009
On the Occasion of the 150th Anniversary of the Publication of Origin of Species by Darwin - Evolution as Natural Philosophy	Güngör Gündüz (Chemical Engineering, METU)	20.03.2009
On conditional stability of quadratic systems of differential equations	Vasiliy Belozyorov (Dnepropetrovsk State University, Ukraine)	
On Portfolio Optimization: Some Supplementary Documentations	Gerhard-Wilhelm Weber (UME)	06.03.2009
A method of design of a linear output feedback and its application to OGY (Ott-Grebogi-Yorke) control problem	Vasiliy Belozyorov (Dnepropetrovsk State University, Ukraine)	
New Applications of PAC-Bayes Analysis	John Shawe-Taylor (University College London (UCL),UK)	06.02.2009
Speaker 1:Peer Group Situations and Games	Rodica Branzei and Stef Tijs (Alexandru Ioan Cuza University, Iași-Romania and Tilburg University, The Netherlands)	30.01.2009
Speaker 2: Approximate Solutions for Multi-Criteria Situations via Improvement Sets		
Incomplete Markets: Challenge for Valuation and Hedging	Martin Rainer (UME)	16.01.2009
Visit of Some Young Americans	Gerhard Wilhelm Weber (METU)	02.01.2009

Dinamik Sistemler Grup Seminerleri

On Some Mathematical Foundations of Nonlinear Optimization	Gerhard-Wilhelm Weber (UME)	12.06.2009
Homoclinic orbits of 3D quadratic systems	Vasiliy Belozyorov (Dnepropetrovsk State University, Ukraine.)	22.05.2009
New definitions for impulsive differential equations	Marat Akhmet (METU, Dept. of Math.)	08.05.2009
Approximation of Bounds on Mixed Level Orthogonal Arrays	Devin Sezer (UME)	24.04.2009
Stabilization of bilinear control systems by stability cones	Vasiliy Belozyorov (Dnepropetrovsk State University, Ukraine.)	10.04.2009

On the OGY Method for Control of Chaos	Mehmet Onur Fen (METU, Dept. of Math.)	03.04.2009
On conditional stability of quadratic systems of differential equations	Vasiliy Belozyorov (Dnepropetrovsk State University, Ukraine.)	20.03.2009
A method of design of a linear output feedback and its application to OGY (Ott-Grebogi-Yorke) control problem.	Vasiliy Belozyorov (Dnepropetrovsk State University, Ukraine.)	06.03.2009

Özel Seminerler

Neural networks: principles and applications	Zuzana Oplatková (Tomas Bata University in Zlin, Faculty of Applied Informatics Zlín, Czech Republic)	09.11.2009
Codes, Invariants and Modular Forms	Patrick Sole (CNRS-13S, ESSI)	05.10.2009
Modular Curves and Coding Theory	Winnie Li (Department of Mathematics, The Pennsylvania State University)	05.10.2009
Model Generation and its Application in Financial Sector	Vadim Strijov (Computer Center of Russian Academy of Sciences, Moscow)	05.10.2009
The Max Planck Society – promoting excellence in science	Kristina Schmücker (Max Planck Society, Munich, Germany)	15.05.2009
Avrasya'da Enerji Mücadelesi ve Türkiye'nin Rol Alma Çabaları	Orhan COŞKUN (REUTERS)	08.05.2009
Asset Liability Models for Life Insurances	Angelika May (Carl von Ossietzky University of Oldenburg, Germany)	22.04.2009
Mortgage Sigortası ve Türkiye Uygulaması: Borç Ödeme Sigortası Genel Şartları	Suna Özyüksel Oksay (Türk Sigorta Enstitüsü Vakfı Başkanı)	10.04.2009

Seminer Serisi

Application of Neural Networks for Characteristic Shapes in Medicine Target Groups: Mathematics, Engineering, Medicine	Stefan Giebel (Technische Universität Braunschweig)	18.12.2009
Comparison of Neural Networks and Configuration Frequency Analysis for Pattern Analysis in Criminology	Stefan Giebel (Technische Universität Braunschweig)	17.12.2009
Forecasting of Stochastic Market Prices via Neural Networks	Stefan Giebel (Technische Universität Braunschweig [1])	22.12.2009
Symbolic regression: principles and applications	Zuzana Oplatková (Tomas Bata University in Zlin, Faculty of Applied Informatics Zlín, Czech Republic)	13.11.2009
Evolutionary algorithms: principles and applications	Zuzana Oplatková (Tomas Bata University in Zlin, Faculty of Applied Informatics Zlín, Czech Republic)	10.11.2009
Neural networks: principles and applications	Zuzana Oplatková (Tomas Bata University in Zlin, Faculty of Applied Informatics Zlín, Czech Republic)	09.11.2009
Analysis of regression model parameters	Vadim Strijov (Computer Center of Russian Academy of Sciences, Moscow)	09.10.2009
Methods of model selection and dimensionality reduction	Vadim Strijov (Computer Center of Russian Academy of Sciences, Moscow)	07.10.2009
Model Generation and its Application in Financial Sector	Vadim Strijov (Computer Center of Russian Academy of Sciences, Moscow)	05.10.2009
Monotonicity properties of interval solutions for convex interval games	Rodica Branzei (Alexandru Ioan Cuza University, Iași-Romania)	03.02.2009
Speaker 1: Peer Group Situations and Games Speaker 2: Approximate Solutions for Multi-Criteria Situations via Improvement Sets	Rodica Branzei and Stef Tijs (Alexandru Ioan Cuza University, Iași-Romania and Tilburg University, The Netherlands)	30.01.2009

EK: 3

EĐİTİM VE ÖĐRENCİ

İSTATİSTİKLERİ

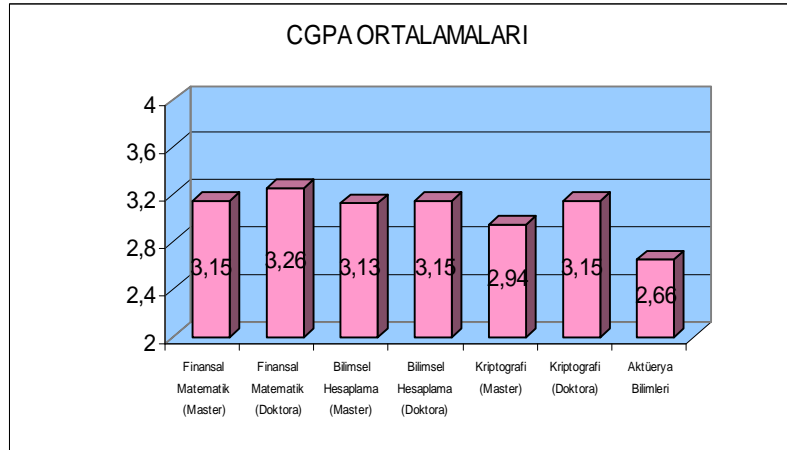
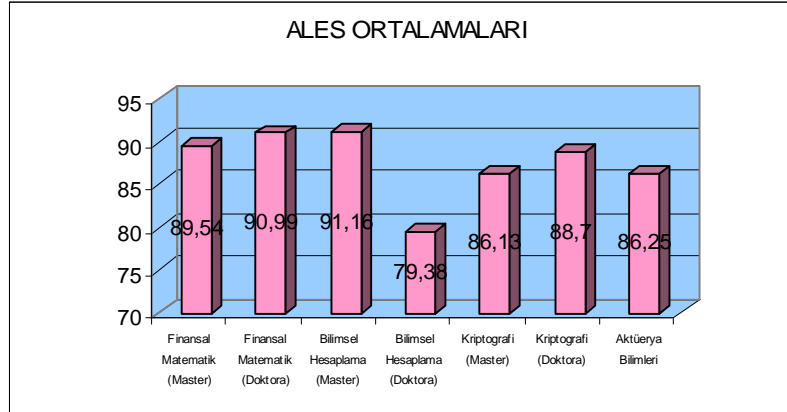
* Veriler <http://oidb.metu.edu.tr> adresinden temin edilmiştir.

BAŞVURULAR

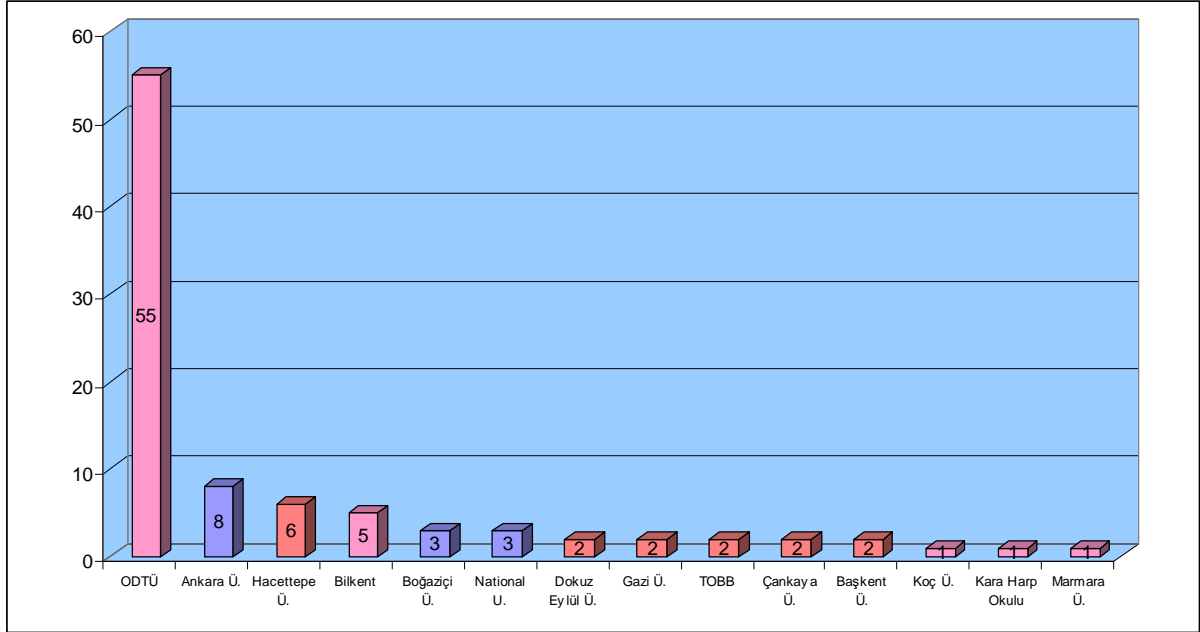
	2009-2010		
	BAŞVURU	KABUL	KAYIT
Aktüerya Bilimleri	16	16	11
Bilimsel Hesaplama	13	9	6
Finansal Matematik	60	41	20
Kriptografi	35	27	22
Toplam	124	93	59

UME ÖĞRENCİLERİNİN ALES VE CGPA ORTALAMALARI

2009-2010 KABUL EDİLEN ÖĞRENCİLER



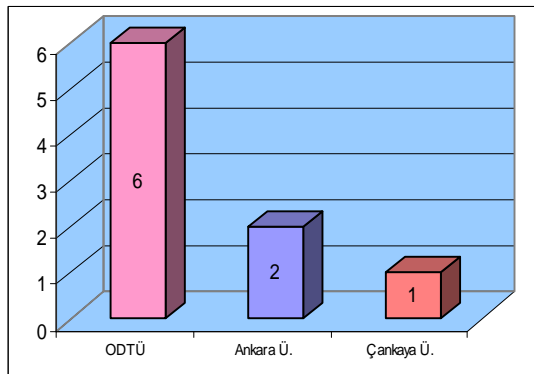
UME'YE KABUL EDİLEN ÖĞRENCİLERİN MEZUN OLDUKLARI ÜNİVERSİTELERE GÖRE DAĞILIMI



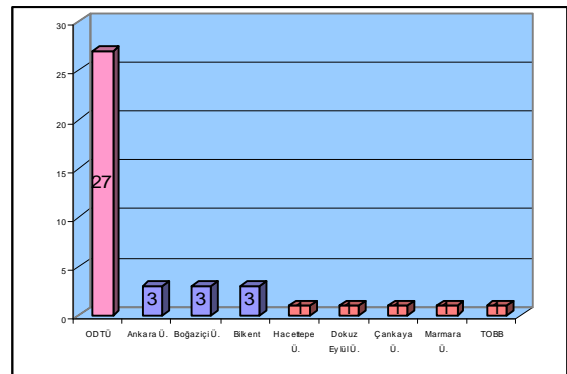
UME'YE KABUL EDİLEN ÖĞRENCİLERİN LİSANS DERECESİNİ ALDIKLARI ÜNİVERSİTELER

2009-2010

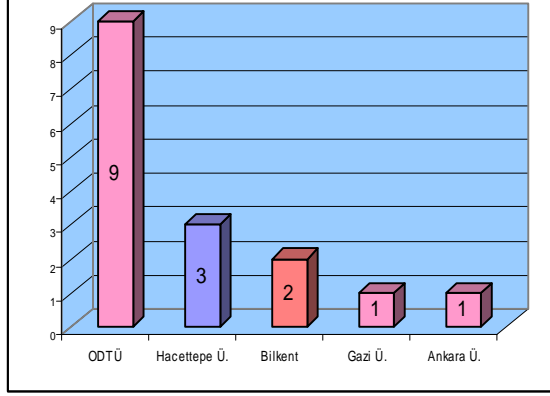
BİLİMSEL HESAPLAMA



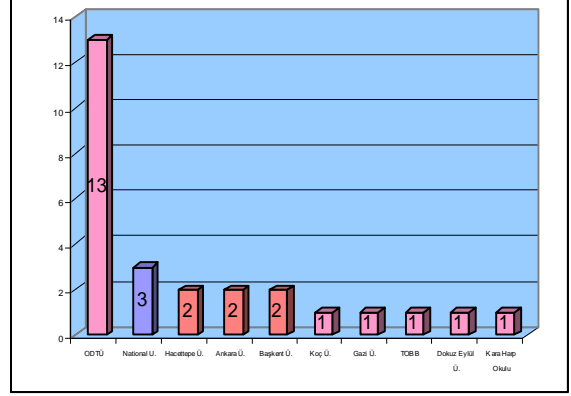
FİNANSAL MATEMATİK



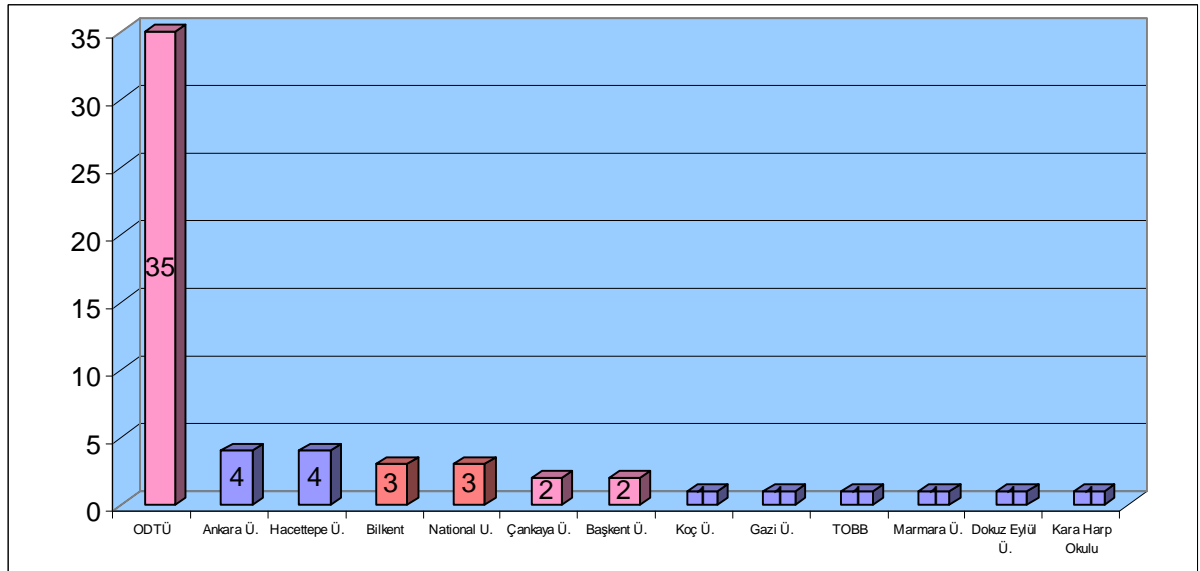
AKTÜERYA BİLİMLERİ



KRİPTOGRAFİ



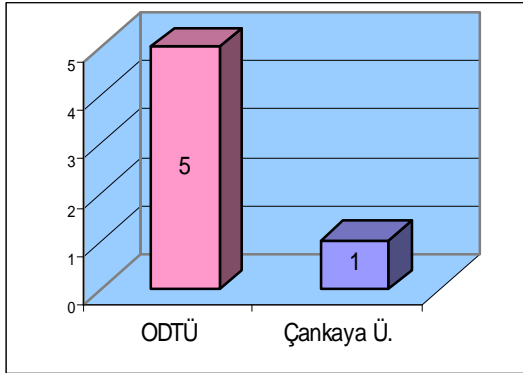
UME'YE KAYIT YAPTIRAN ÖĞRENCİLERİN MEZUN OLDUKLARI ÜNİVERSİTELERE GÖRE DAĞILIMI



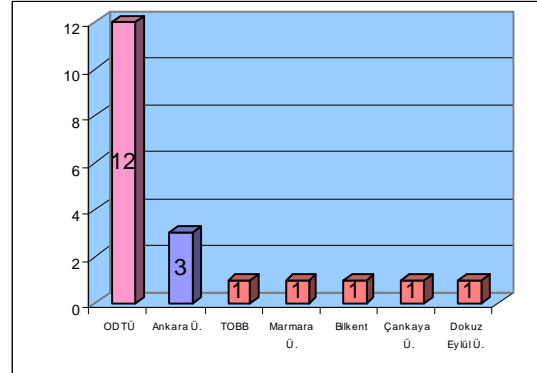
UME'YE KAYIT YAPTIRAN ÖĞRENCİLERİN LİSANS DERECESİNİ ALDIKLARI ÜNİVERSİTELER

2009-2010

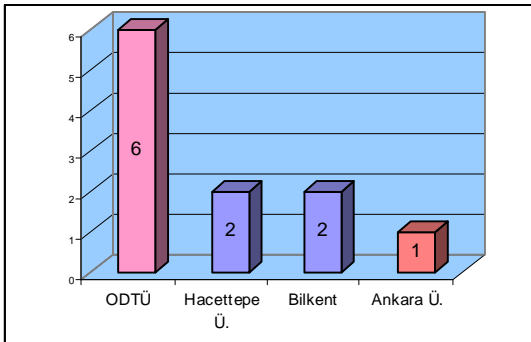
BİLİMSEL HESAPLAMA



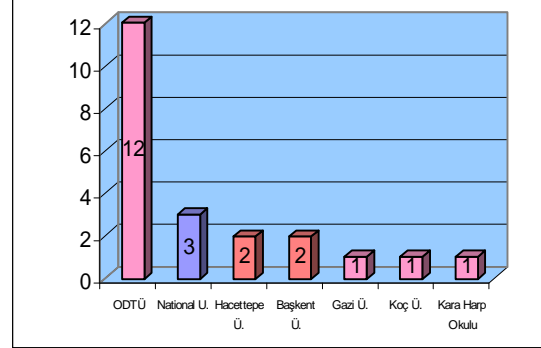
FİNANSAL MATEMATİK



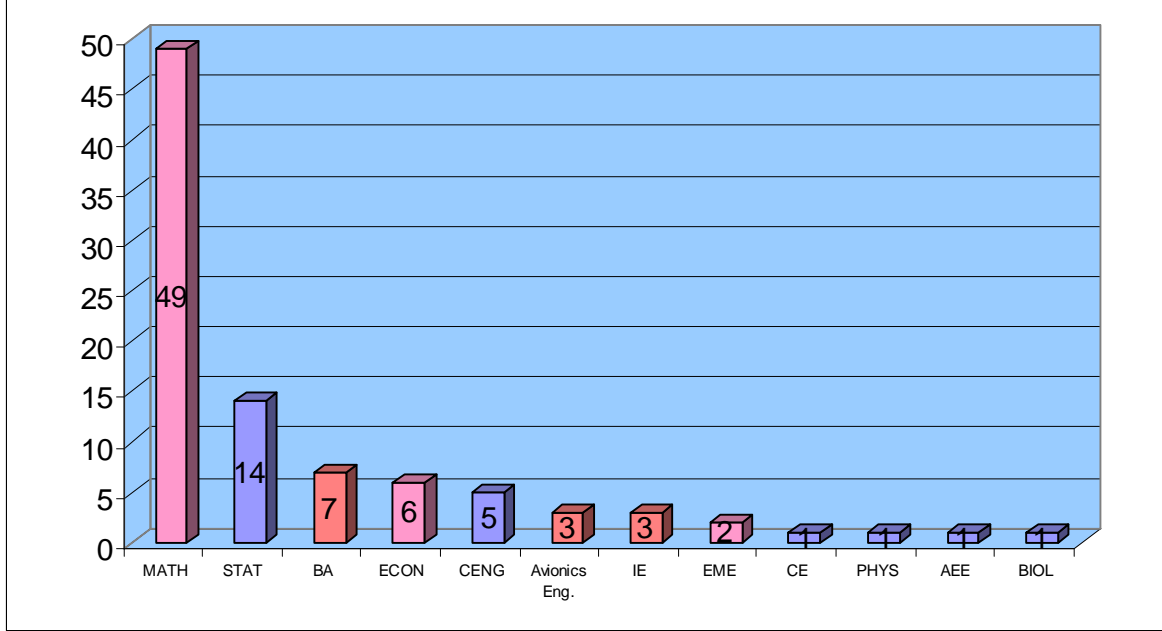
AKTÜERYA BİLİMLERİ



KRİPTOGRAFİ



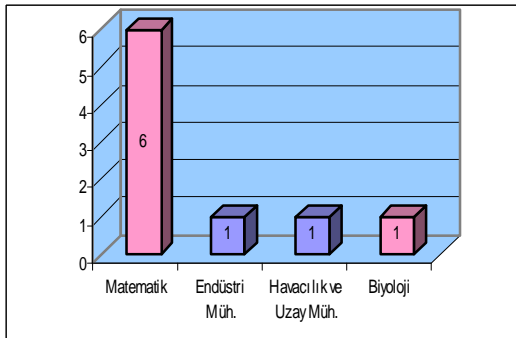
UME'YE KABUL EDİLEN ÖĞRENCİLERİN MEZUN OLDUKLARI BÖLÜMLERE GÖRE DAĞILIMI



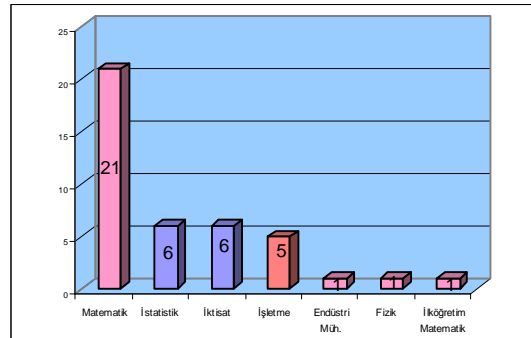
UME'YE KABUL EDİLEN ÖĞRENCİLERİN LİSANS DERECELERİNİ ALDIKLARI BÖLÜMLER

2009-2010

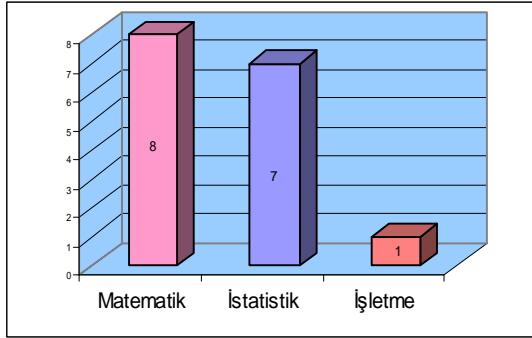
BİLİMSEL HESAPLAMA



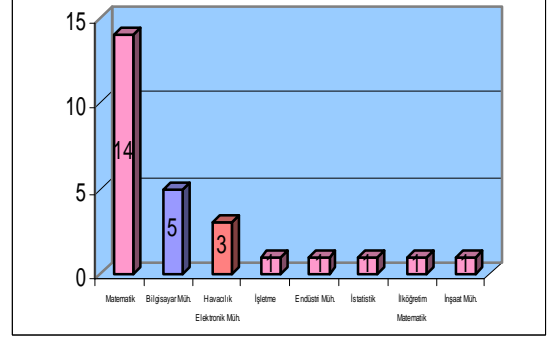
FİNANSAL MATEMATİK



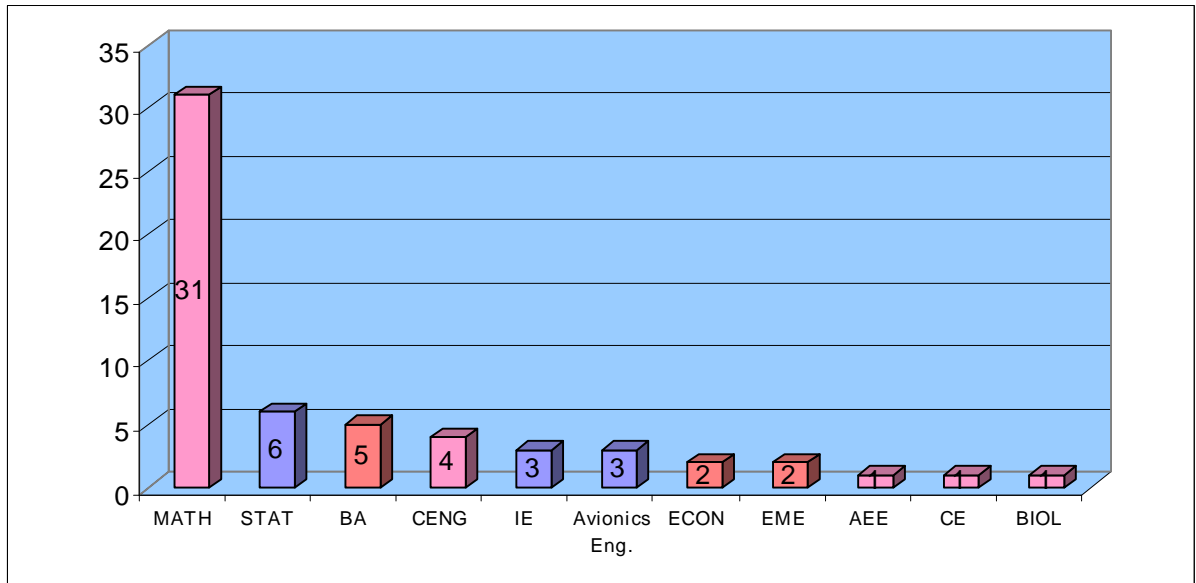
AKTÜERYA BİLİMLERİ



KRİPTOGRAFİ



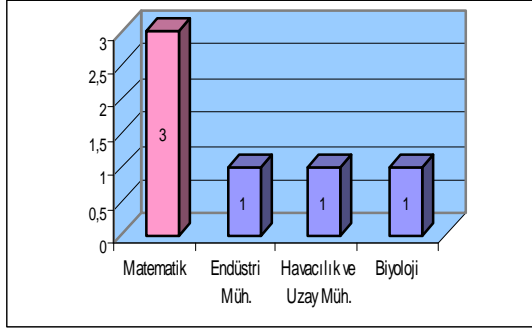
UME'YE KAYIT YAPTIRAN ÖĞRENCİLERİN MEZUN OLDUKLARI BÖLÜMLERE GÖRE DAĞILIMI



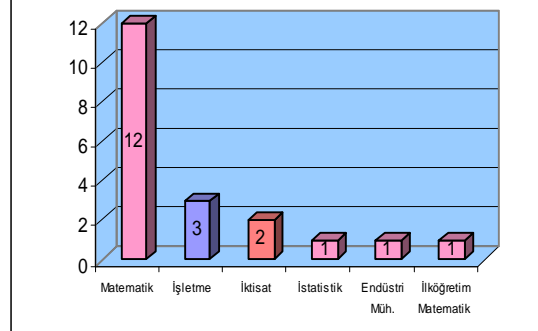
UME'YE KAYIT YAPTIRAN ÖĞRENCİLERİN LİSANS DERECELERİNİ ALDIKLARI BÖLÜMLER

2009-2010

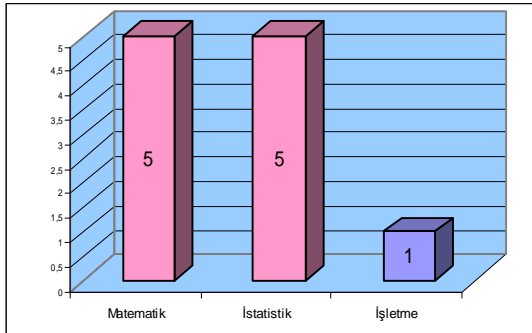
BİLİMSEL HESAPLAMA



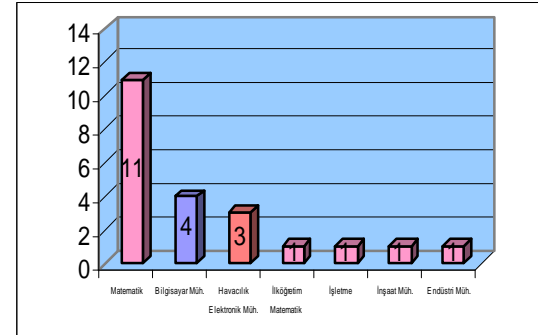
FİNANSAL MATEMATİK



AKTÜERYA BİLİMLERİ

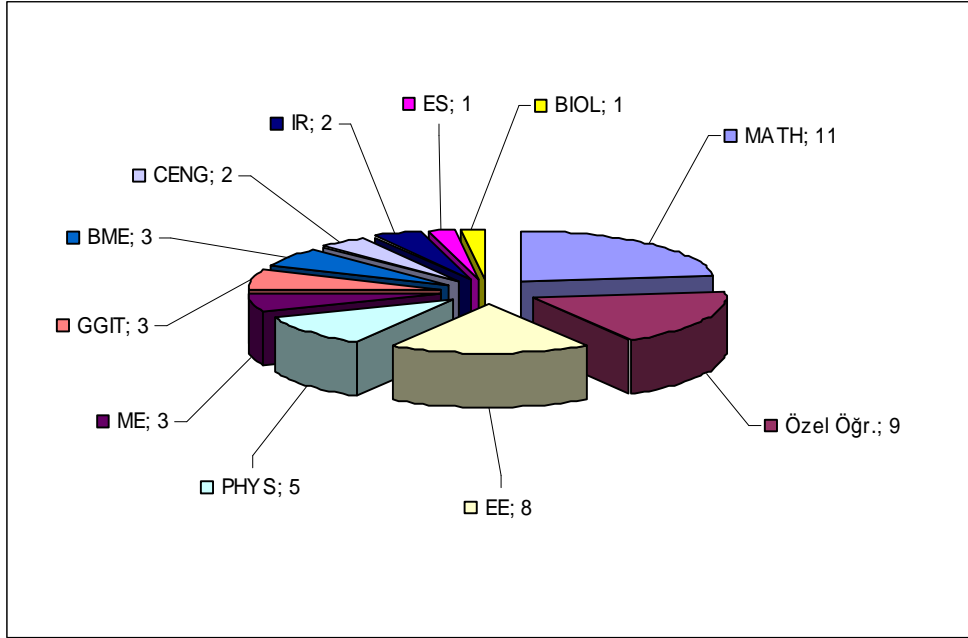


KRİPTOGRAFI



UME DERSLERİNİ ALAN UME DIŞI ÖĞRENCİLERİN BÖLÜMLERE GÖRE DAĞILIMI

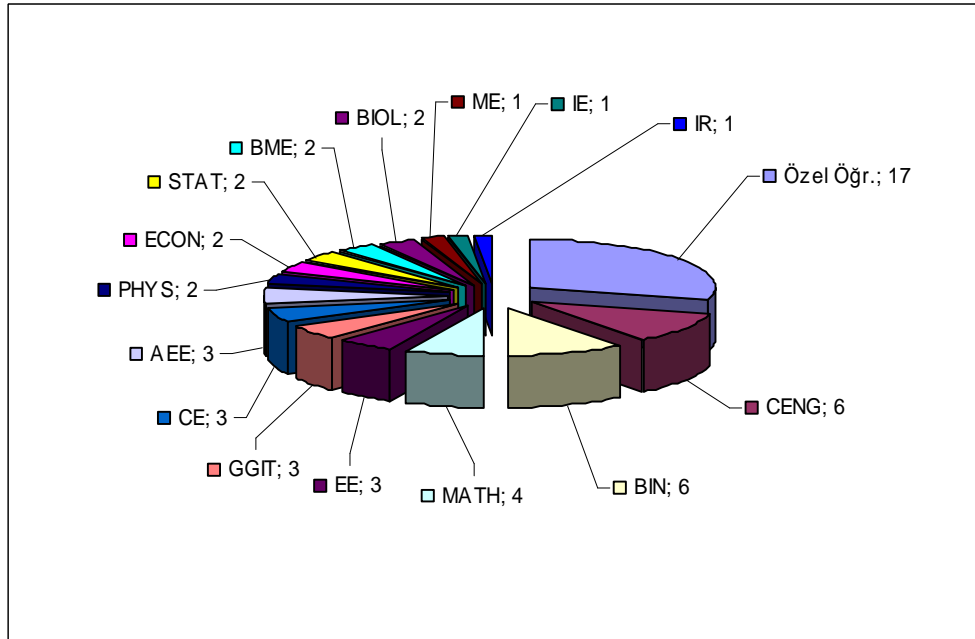
2008-2009 II.Dönem



Toplam Öğrenci Sayısı = 249

UME Dışı Öğrenci Sayısı = 48 (19%)

2009-2010 I.Dönem

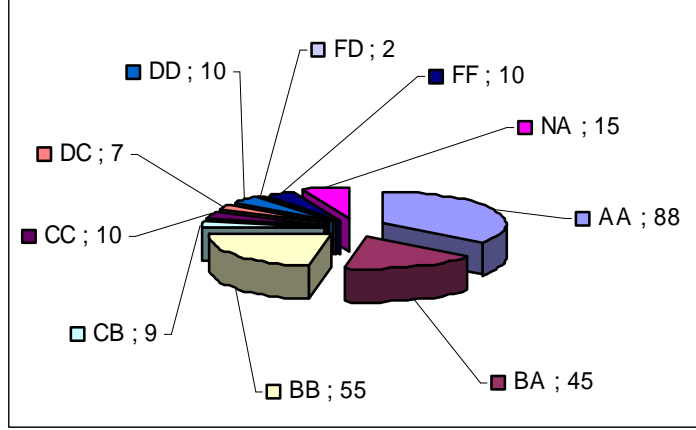


Toplam Öğrenci Sayısı = 301

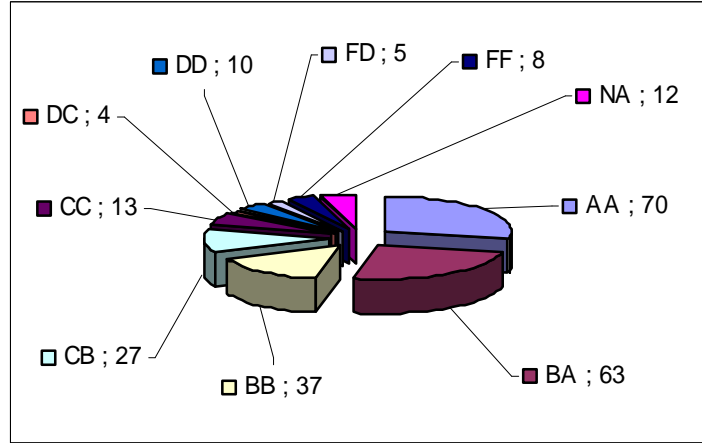
UME Dışı Öğrenci Sayısı = 58 (19%)

DÖNEMSEL VERİLEN TOPLAM NOT SAYISI

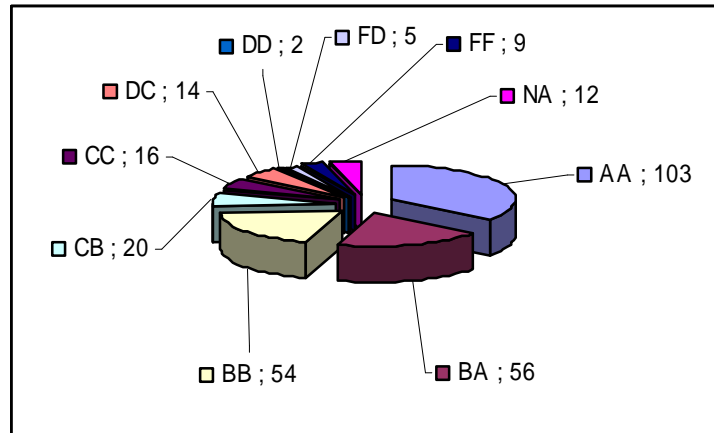
2008-2009 I. Dönem



2008-2009 II. Dönem



2009-2010 I. Dönem



EK: 4
2009 YILINDA MEZUN OLAN
ÖĞRENCİLER

Bilimsel Hesaplama Programı

Sevin Gümğüm	“The Dual Reciprocity Boundary Element Method Solution of Fluid Flow Problems” (Doktora Tezi)	Münevver Tezer
Bengisen Pekmen*	“Multilevel Derivative Free Optimization” (Y. Lisans Tezi)	Bülent Karasözen
Andriy Kushnarov	“Numerical Method for Conform Reflection” (Y. Lisans Tezi)	Hakan Öktem
Sedat Sarıkaya	“Combination of Conventional Regularization Methods and Genetic Algorithms for Solving the Inverse Problem of Electrocardiography” (Y.Lisans Tezi)	Yeşim Serinağaoğlu

Hayat Sigortası Opsiyonu

Serpil Özler	“Retrospective Hedging: A Study of Futures Contracts on TurkDEX” (Bitirme Projesi)	Seza Damıçoğlu
---------------------	-------------------------------------------------------------------------------------------	-----------------------

* Enstitümüzde doktora devam eden öğrenciler

Finansal Matematik Programı

Özgenay Çetinkaya	“Pricing Default and Prepayment Risks of Fixed-Rate Mortgages in Turkey an Application of Explicit Finite Difference Method” (Y. Lisans Tezi)	Işıl Erol
Zeynep Canan Temiz	“Pricing Inflation Indexed Swaps and Swaptions Using an HJM Model” (Y. Lisans Tezi)	Azize Hayfavi
Rukiye Yılmaz	“Pricing The Mortgage Default Option in Turkey With Cox Ross Rubinstein Model” (Bitirme Projesi)	Işıl Erol
Erkan Büyükbebeci	“Comparison of Mars, Cmars and Cart in Predicting Default Probabilities for Emerging Markets” (Bitirme Projesi)	Gerhard W. Weber
Burcu İren	“Term Structure Analysis of Bond Yields By Macro-Finance Representation” (Bitirme Projesi)	Kasırga Yıldırak
Kadir Gürsoy	“The Effects of Latest Parametric Reform on Financial Sustainability and Actuarial Fairness for Pay-As-You-Go Pension System in Turkey and Some Alternative Reform Options” (Bitirme Projesi)	Burçak B. Erkan

Kriptografi Programı

Elif Saygı	“Results on LCZ Sequences and Quadratic Forms” (Doktora Tezi)	Ferruh Özbudak
Onur Koçak	“Design and Analysis of Hash Functions” (Y. Lisans Tezi)	Ali Doğanaksoy
Aslı Darbuka	“Related-key Attacks on Block Ciphers” (Y. Lisans Tezi)	Ali Doğanaksoy

Cihangir Tezcan*	"Impossible Differential Cryptanalysis of Reduced Round HIGHT" (Y. Lisans Tezi)	Ali Dođanaksoy
Derya Özkaya	"A Survey on Quaternary Codes and Their Binary Images" (Y. Lisans Tezi)	Melek Diker Yücel
Köksal Muş*	"An Alternative form for Elliptic Curve Crpyotography: Edwards Curves" (Y. Lisans Tezi)	Sefa Feza Arslan
Neşe Öztop*	"Combined Attacks on Block Ciphers" (Y. Lisans Tezi)	Ali Dođanaksoy
Pelin Erdem	"A framework for document/file authorization in document management systems via PKI" (Bitirme Projesi)	Ersan Akyıldız
Emre Yüce*	"A Case Study on the Security of IPV6 Transition Methods" (Bitirme Projesi)	Ali Dođanaksoy
Bilal Alam*	"Secure Email Transactions Using S/Mime " (Bitirme Projesi)	Ali Dođanaksoy
Riaz Muhammad*	"A Survey of Solinas Primes" (Bitirme Projesi)	Ersan Akyıldız
Hakan Gürbaşlar	"Linear Characteristics of Whirlpool Block Cipher" (Bitirme Projesi)	Ali Dođanaksoy
Ünal Tatar	"Steganography and Steganalysis" (Bitirme Projesi)	Ali Dođanaksoy
Yavuz Gökırmak	"The Analysis of Nonlinear Boolean Function Generation Via Genetic Algorithm" (Bitirme Projesi)	Melek Yücel

* Enstitümüzde doktora devam eden öğrenciler

EK: 5
YENİ AÇILAN DERSLER

2008–2009 Bahar Dönemi

METU INSTITUTE OF APPLIED MATHEMATICS

Course Title:	Risk Management and Insurance								
Course Code:	IAM 547								
Credit:	(3-0)3								
Instructor's Name:	Fikret Kutuk, MBA, Actuary, fikret.kütük@hazine.gov.tr , Sevtap Kestel, sevtap.kestel@vwl.uni-freiburg.de ,								
Prerequisites:	None								
Content:	<ul style="list-style-type: none"> - Basic concepts in Risk Management: Introduction to risk, risk identification and evaluation, introduction to various risk exposures, risk management techniques: non-insurance measures - Secondary Risk Management/Legal Principles in Risk and Insurance: Fundamental principles, analysis of insurance contracts, selection and implementation of RM techniques - Property and Liability Risks: Automobile insurance, homeowners insurance - Life and Health Risks: Fundamentals of life insurance, health insurance, retirement planning, employee benefits, financial and estate planning - The Insurance Industry: Types of insurers and marketing systems, Insurance company operations - Risk measures and modelling: Utility function, optimal insurance, excess loss insurance, risk models and reinsurance models 								
Aims:	Financial objectives of corporate risk management process, empirical evidence of how and why firms manage risk, institutional environment and regulations of risk management. This course surveys risk fundamentals, the risk management process, and insurance as a systematic approach to transfer and finance risk. It examines how insurance offers financial protection against major risks individuals face, how the insurance market is structured, and how and why the industry is regulated. This course also provides the theories and practical applications from the industry as well as issues related to the furtherance of insurance as a viable risk management solution.								
Learning Outcomes:	Understanding the risk structure and the methods to handle the risk in insurance, how to determine risk for different types of insurance, insurance operations and products.								
Suggested Textbooks:	Trieschmann, Hoyt, Sommer, Risk Management and Insurance, 12 th Ed., 2005. Vaughan, E., Vaughan, T., Essentials of Insurance: A Risk Management Perspective. Rejda, G., Principles of Risk Management and Insurance, 6 th Ed. 1998. Hossack, Pollard, Zehnirith, Introductory statistics with applications in general insurance, Cambridge, 1995.								
Resources:	To be given during the lectures								
Others	<p><u>Assessment:</u> Case studies as homework will be assigned during the semester. A term project based on the recent publications will be assigned to each student. Class participation is expected. Students are strongly recommended to attend to the lectures.</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Homework</td> <td style="text-align: right;">10%</td> </tr> <tr> <td>Term Project:</td> <td style="text-align: right;">30%</td> </tr> <tr> <td><u>Final Exam</u></td> <td style="text-align: right;"><u>60%</u></td> </tr> <tr> <td>Total Grade</td> <td style="text-align: right;">100%</td> </tr> </table> <p>You are required to gain the 50% of the final exam to pass the course.</p>	Homework	10%	Term Project:	30%	<u>Final Exam</u>	<u>60%</u>	Total Grade	100%
Homework	10%								
Term Project:	30%								
<u>Final Exam</u>	<u>60%</u>								
Total Grade	100%								

METU INSTITUTE OF APPLIED MATHEMATICS

Course Title:	Special Topics: Algorithmic Number Theory
Course Code:	IAM 719
Credit:	(3-0) 3
Instructor's Name:	Doç. Dr. Emrah Çakçak
Prerequisites:	Public Key Cryptography, Consent of the Instructor.
Content / Aims	The aim of this course is to introduce advanced topics in algorithmic number theory for cryptographic purposes such as number field sieve algorithm for integer factorization and cryptography based on ideal class groups of quadratic number fields.
Learning Outcomes:	After taking this course the students will have enough background on algorithms for number fields to apply them in cryptographic purposes such as integer factorization using number field sieve algorithm.
Outline:	<ol style="list-style-type: none"> 1. Basic algorithms of number theory: Continued Fractions, Solving Polynomial equations modulo a prime number, a prime power, over the integers. 2. Solving the Pell equation. 3. Smooth numbers and the quadratic sieve. 4. The number field sieve. 5. Computing the invariants of a number field.
Suggested Textbooks/Resources:	<ol style="list-style-type: none"> 1. Buhler J.P., Stevenhagen P. (eds.): Algorithmic Number Theory, MSRI Publications 44 (2008) (online version available at http://www.msri.org/communications/books/Book44/contents.html) 2. Cohen H.: A Course in Computational Algebraic Number Theory. Springer (1995).

METU INSTITUTE OF APPLIED MATHEMATICS

Course Title:	Special Topics: Algebraic Aspects of Nonlinear Functions
Course Code:	IAM 722
Credit:	(3-0)3
Instructor's Name:	Prof. Dr. Ferruh Özbudak
Prerequisites:	Consent of the instructor
Content:	This course introduces various aspects of nonlinearity in cryptography together with its connections to geometry, number theory, design theory, coding theory and related areas.
Aims:	<p>The aim of this course is to introduce algebraic aspects of power polynomials used to construct (almost) perfect nonlinear (APN) and almost bent (AB) functions. After giving some basic facts about Boolean functions such as nonlinearity, differential uniformity, we shall discuss all known characterizations of APN and AB function.</p> <p>The emphasis will be given on the affine equivalence classes such as extended affine and Carlet-Charpin-Zinoviev (CCZ) equivalence. We will study characteristic properties of APN and AB functions.</p>
Learning Outcomes:	This course will be beneficial for students interested in cryptographically secure nonlinear function construction methods. Moreover, at the end of this course, students should have a good overview of recent approaches in APN and AB functions.
Suggested Textbooks:	<ul style="list-style-type: none"> • T. Beth, D. Jungnickel and H. Lenz, Design Theory, 2nd edition, Cambridge University Press, 1999 QA166.25.B47 • L. Budaghyan, The Equivalence of Almost Bent and Almost Perfect Nonlinear Functions and Their Generalizations, PhD. Thesis, 2005 • C. Canniere, Analysis and Design of Symmetric Encryption Algorithms, PhD. Thesis – Chapter 5, 2007 • C. Carlet, Vectorial Boolean Functions for Cryptography, 2008 • C. Carlet, Boolean Functions for Cryptography and Error Correction Codes, 2008. • M. Maxwell, Almost Perfect Nonlinear Functions and Related Combinatorial Structures, PhD. Thesis, 2005.
Outline:	<ul style="list-style-type: none"> • Week 1: General principles, Boolean func., Walsh transforms, nonlinearity, differential uniformity, APN and AB functions, s-boxes criteria. • Weeks 2 - 5: Classification of nonlinear functions, known APN and AB functions. • Weeks 6 - 8: Characterization of power polynomials according to differential properties (Gold, Kasami, Welch, Niho, inverse case). • Weeks 9 - 14: Equivalence Problem, extended affine equivalence, CCZ equivalence.
Reference Material	<ul style="list-style-type: none"> • M. Brinkman and G. Leander, On the Classification of APN Functions up to Dimension Five, WCC'07, pp.39-48, 2007 • L. Budaghyan, The Simplest Method for Constructing APN Polynomials EA-inequivalent to Power Functions, WAIFI'07, LNCS 4547, pp.177-188, 2007. • E. Byrne, C. Bracken and N. Markin, New Families of Quadratic Almost Perfect Nonlinear Trinomials and Multinomials, Finite Fields and Their Applications, 14, No.3, pp.703-714, 2008 • C. Carlet, P. Charpin and V. Zinoviev, Codes, Bent Functions and Permutations Suitable for DES-like Cryptosystems, Des. Codes and Cryptography, Vol.15, pp.125-156, 1998. • H. Dobbertin, Almost Perfect Nonlinear Power Functions over $GF(2^n)$: the Niho Case., Inform. And Comput., 151, pp.57-72, 1999. • H. Dobbertin, D. Mills, E. Müller, A. Pott and W. Willems, APN Functions in Odd Characteristic, 2001. • H. Dobbertin, Almost Perfect Nonlinear Power Functions over $GF(2^n)$: the Welch Case, IEEE Trans. Inform. Theory, 45, pp.1271-1275, 1999. • R. Gold, Maximal Recursive Sequences with 3-valued Recursive Cross-Correlation Functions, IEEE Trans. Ing. Theory, Vol. IT-14, no.1, pp. 154-156, 1968 • D. Hertel and A. Pott, A Characterization of a Class of Maximum Nonlinear Functions, • D. Hertel and A. Pott, Two Results on Max. Nonlinear Functions, Des. Codes and Cryptography, DOI 10.1007/s10623-007-9124-z, 2007. • D. Jungnickel and A. Pott, Perfect and Almost Perfect Sequences, Discrete Applied Mathematics, Vol. 95, pp. 351-359, 1999. • T. Kasami, The Weight Enumerators of Several Classes of Subcodes of the Second Order Binary Reed-Muller Codes, Information and Control, Vol.18, pp.369-394, 1971. • P. Langevin and P. Veron, On the Nonlinearity of Power Functions, Des. Codes and Cryptography, 2005. • K. Nyberg, Differentially Uniform Mappings for Cryptography, EUROCRYPT'93, LNCS, pp. 55-64, 1994. • E. Pasalic, On Cryptographically Significant Mappings over $GF(2^n)$, WAIFI '08, Arithmetic of Finite Fields, Vol.5130, 2008

METU INSTITUTE OF APPLIED MATHEMATICS

Course Title:	Special Topics: Introduction to Cryptographic Hardware Design
Course Code:	IAM 724
Credit:	3(3-0)
Instructor's Name:	Dr. Tolga Yalçın
Prerequisites:	EE 348 Introduction to Logic Design, or CEng 232 Logic Design, or any fundamental logic design course
Content:	Combinational and sequential logic design, digital systems; hardware description languages (HDLs), reconfigurable logic devices; basic building blocks for cryptography; hardware design block ciphers, stream ciphers, asymmetrical ciphers; design examples
Aims:	To give an inside to fundamentals of digital system design for cryptography, design tools and considerations.
Learning Outcomes:	Students will be able to design basic cryptographic modules on reconfigurable logic devices (FPGAs, CPLDs) using hardware description languages. They will also be able to understand the hardware complexity of a cryptographic algorithm and decide on a hardware, software or a co-design solution.
Suggested Textbooks:	<ul style="list-style-type: none"> - Digital Logic and Computer Design, M. Mano - Cryptographic Algorithms on Reconfigurable Hardware, F. R. Henriquez et al - Various theses, papers and handouts
Outline:	<p>Review of digital systems and hardware description languages</p> <ul style="list-style-type: none"> - Digital design fundamentals: Number systems, signal representation - Combinational digital circuits - Hardware description languages: VHDL and Verilog-HDL comparison - Introduction to Verilog-HDL - Combinational circuit design using Verilog-HDL <p>Sequential digital systems</p> <ul style="list-style-type: none"> - Sequential digital circuit fundamentals and design - Finite state machines - Registers and memories - Sequential circuit design using Verilog-HDL <p>Digital system design examples</p> <ul style="list-style-type: none"> - Design of combinational arithmetic units - Design of sequential arithmetic units - Microcoded finite state machine design <p>Basic building blocks for cryptography</p> <ul style="list-style-type: none"> - Design of Galois Field computation units - Digital implementation of S-boxes <p>Block cipher hardware design: AES Stream cipher hardware design: SHA Asymmetric cryptographic hardware design: RSA Custom design examples</p>
Resources:	Institute of Applied Mathematics Cryptographic Hardware Laboratory

2009–2010 Güz Dönemi

METU INSTITUTE OF APPLIED MATHEMATICS

Course Title:	Special Topics: Cryptographic Processor Design
Course Code:	IAM 725
Credit:	3(3-0)
Instructor's Name:	Tolga Yalçın (tyalcin@metu.edu.tr)
Prerequisites:	Basic logic design course, basic computer architecture/organization course and IAM 724: Introduction to Cryptographic Hardware Design
Content:	Review of digital system design and hardware description languages (HDLs), reconfigurable logic devices; design of computer systems and components, processor design, microprogramming, memory management, crypto co-processors and functional units
Aims:	To give the students theoretical and practical background to design a programmable cryptographic processor.
Learning Outcomes:	Students will be able to design a basic stored program computer with cryptographic processing capabilities, and implement it using Verilog-HDL for FPGAs. They will also be able to address advanced issues such as pipelining, caching, resource sharing, retiming.
Suggested Textbooks:	<ul style="list-style-type: none">- Computer Organization and Design: The Hardware/Software Interface, D. Patterson and J. Hennessy- Computer Organization, V. C. Hamacher et al- Computer Architecture and Organization, M. Mano
Outline:	<ul style="list-style-type: none">- Digital system design and tools revisited- Basic computer organization- Instruction formats and instruction sets- ALU design- Datapath design- Control design: Hardwired and microprogrammed- Pipelining- Memory systems- Complex arithmetic unit and cryptographic co-processor design
Resources:	

METU INSTITUTE OF APPLIED MATHEMATICS

Course Title:	Special Topics: Combinatorics
Course Code:	IAM 727
Credit:	(3-0)
Instructor's Name:	Emrah Çakçak (cakcak@metu.edu.tr)
Prerequisites:	Consent of the Instructor.
Content / Aims	The aim of this course is to introduce basic and advanced topics of combinatorics.
Learning Outcomes:	Familiarity to most of the classical definitions and results of combinatorics.
Outline:	<ol style="list-style-type: none"> 1. Basic enumeration techniques. 2. Distinct representatives, Hall's theorem. 3. Permanents, van der Waerden conjecture. 4. Graphs, Euler's theorem, DeBruijn's theorem. 5. Ramsey's theorem. 6. Extremal Problems, Dilworth's theorem. 7. Block Designs. 8. Difference sets. 9. Finite Geometries. 10. Orthogonal Latin Squares. 11. Hadamard Matrices. 12. General Constructions of Block Designs.
Suggested Textbooks/Resources:	<ol style="list-style-type: none"> 1. Hall, M. Jr.: Combinatorial Theory. 2. van Lint, J. H.; Wilson, R. M.: A Course in Combinatorics. 3. Rosen, K. H.; Michaels, J. G. et al.: Handbook of Discrete and Combinatorial Mathematics. 4. Cameron, P. J.: Notes on Counting. (Lecture Notes) 5. Cameron, P. J.: Combinatorics: topics, techniques, algorithms.

METU INSTITUTE OF APPLIED MATHEMATICS

Course Title:	Special Topics: Stochastic Energy Pricing Models
Course Code:	IAM 753
Credit:	3(3-0)
Instructor's Name:	Martin Rainer (mrainer@metu.edu.tr)
Prerequisites:	Stochastic Calculus (e.g. like textbook of Lamberton-Lapeyre); and consent of the instructor;
Content:	<p>Motivation: Energy markets and related pricing models for the major traded assets and financial instruments becomes increasingly important for Turkey, due to several forthcoming projects in the energy markets which make Turkey a main distribution hub between the Middle East and Europe.</p> <p>This course concentrates on mathematical concise models for the pricing of assets and derivatives in the related markets of gas, electricity, and temperature. The framework is that of general Levy processes, related Ornstein-Uhlenbeck processes and semimartingales, including jumps and stochastic volatility.</p>
Aims:	After this course the participant will have a detailed understanding of major mathematical models for energy markets, their application to the gas, electricity, and temperature markets and their derivatives. The assumptions, advantages and drawbacks of alternative models are clarified. In parallel to the theory, hands-on examples will be elaborated by the participants using MATHLAB and Excel.
Learning Outcomes:	At the end of this course, students should know how to price assets and derivatives in the major energy markets. The critical judgment towards alternative modeling approaches will be sharpened. The student will also learn how to structure complex tasks, such as the construction of electricity forward curves. Mathematical knowledge and methodology of general semi-martingales and Levy processes will be deepened and trained. This course is an important step for participants who wish to do their MSc or PhD thesis in energy market models, and/or wish to prepare to work as quantitative analyst for a trading desk in energy markets.
Suggested Textbooks:	<p>Lecture notes will be prepared during the course. Most of the content of this course is covered in: F. Benth, J.S. Benth, S. Koekebakker, Stochastic Modelling of Electricity and Related Markets, 2008</p> <p>L. Clewlow, C. Strickland, Energy Derivatives: Pricing and Risk Management, 2000</p> <p>A. Eydeland, K. Wolyniec, Energy and Power Risk Management, 2003</p> <p>Further special references will be given during the course.</p>
Outline:	<p>Energy markets survey (1 week), Energy spot price models (1 week), Forward and swap pricing (1 week), Gas spot and future modeling (1 week), HJM modeling approach to forwards and swaps (1 week), Construction of electricity forward curves (1 week), Electricity future model (1 week), Principal component analysis (1 week), Model calibration (1 week), Options on forwards and swaps (1 week), Asian and spread options (1 week), Temperature modeling (1 week), Temperature derivatives (1 week)</p>
Resources:	LaTEX , MATHLAB, Excel

EK: 6
2009 YILINDA AÇILAN
DERSLERİN LİSTESİ

2008–2009 II. Döneminde verilen dersler

Anabilim Dalı	Dersin Kodu	Dersin Adı	Öğretim Üyesi	Öğr. Sayısı		
				IAM	Diğ.	Top.
Kriptografi	IAM 502	Stream Ciphers	Ali Doğanaksoy	13	1	14
	IAM 504	Public Key Cryptography	Emrah Çakçak	14	1	15
	IAM 512	Block Ciphers	Melek Yücel	16	2	18
	IAM 525	Game Theory	Ersan Akyıldız-/ Z. S. Alparslan Gök	5	6	11
	IAM 719	Special Topics: Algorithmic Number Theory	Emrah Çakçak	3	1	4
	IAM 722	Special Topics: Algebraic Aspects of Nonlinear Functions	Ferruh Özbudak	13	-	13
	IAM 724	Special Topics: Introduction to Cryptographic Hardware Design	Tolga Yalçın	15	2	17

Anabilim Dalı	Dersin Kodu	Dersin Adı	Öğretim Üyesi	Öğr. Sayısı		
				IAM	Diğ.	Top.
Bilimsel Hesaplama	IAM 525	Game Theory	Ersan Akyıldız-/ Z. S. Alparslan Gök	5	6	11
	IAM 529	Applied Nonlinear Dynamics	Bülent Karasözen	5	4	9
	IAM 562	Introduction to Scientific Computing II	Hakan Öktem	4	3	7
	IAM 570	Hybrid Systems	Hakan Öktem	4	0	4
	IAM 664	Inverse Problems	Gerhard W. Weber- İlkay Ulusoy	4	11	15
	IAM 665	Advanced Continuous Optimization	G.W. Weber- Bülent Karasözen	3	2	5
	IAM 748	Special Topics: Portfolio Optimization	Gerhard W. Weber	3		3

Anabilim Dalı	Dersin Kodu	Dersin Adı	Öğretim Üyesi	Öğr. Sayısı		
				IAM	Diğ.	Top.
Finansal Matematik	IAM 520	Financial Derivatives	Seza Danışoğlu	23	1	24
	IAM 522	Stochastic Calculus for Finance	Azize Hayfavi	24	5	29
	IAM 524	Financial Economics	Esma Gaygısız	24	3	27
	IAM 525	Game Theory	Ersan Akyıldız-/ Z. S. Alparslan Gök	5	6	11
	IAM 547	Risk Management and Insurance	Sevtap Kestel- Fikret Kütük	6	1	7
	IAM 548	Stochastic Processes for Insurance and Finance	A.Devin Sezer- Ömer Gebizlioğlu	6	4	10
	IAM 554	Interest Rate Models	Martin Rainer	4	1	5
	IAM 583	Pension Fund Mathematics	Ömer Gebizlioğlu	6		6
	IAM 748	Special Topics: Portfolio Optimization	Gerhard W. Weber	3		3
	IAM 750	Special Topics: Energy Trade and Risk Management	Coşkun Küçüközmen	6		6

2009–2010 I. Döneminde verilen dersler

Anabilim Dalı	Dersin Kodu	Dersin Adı	Öğretim Üyesi	Öğr. Sayısı		
				IAM	Diğ.	Top.
Kriptografi	IAM 501	Introduction to Cryptography	Ali Doğanaksoy	15	13	28
	IAM 503	Applications of Finite Fields	Emrah Çakçak	19	5	24
	IAM 509	Algebraic Aspects of Cryptography	Ersan Akyıldız	9		9
	IAM 519	Basic Mathematics for Cryptography	Abdürrahim Yılmaz	5	1	6
	IAM 725	Special Topics: Cryptographic Processor Design	Tolga Yalçın	6		6
	IAM 727	Special Topics : Combinatorics	Emrah Çakçak	11	1	12

Anabilim Dalı	Dersin Kodu	Dersin Adı	Öğretim Üyesi	Öğr. Sayısı		
				IAM	Diğ.	Top.
Bilimsel Hesaplama	IAM 556	Simulation	İnci Batmaz	7	1	8
	IAM 561	Introduction to Scientific Computing I	Ömür Uğur	3	5	8
	IAM 564	Basic Algorithms and Programming	Hakan Öktem	8	2	10
	IAM 566	Numerical Optimization	Gerhard W.Weber	7	6	13
	IAM 567	Mathematical Modelling	Hakan Öktem	6	2	8
IAM 751	Special Topics: Advanced Mathematical Methods in Finance	Gerhard W. Weber	3	1	4	

Anabilim Dalı	Dersin Kodu	Dersin Adı	Öğretim Üyesi	Öğr. Sayısı		
				IAM	Diğ.	Top.
Finansal Matematik	IAM 521	Financial Management	A.Oran-S.Danışoğlu-N.Güner	28	2	30
	IAM 526	Time Series Applied to Finance	Kasırga Yıldırak	19	1	20
	IAM 530	Elements of Statistics and Probability	Ceylan Yozgatlıgil	31	13	44
	IAM 541	Probability Theory	Yeliz Yolcu	17	3	20
	IAM 543	Regulation and Supervision of Risks	Coşkun Küçüközmen	20		20
	IAM 556	Simulation	İnci Batmaz	7	1	8
	IAM 612	Financial Modeling with Jump Processes	Azize Hayfavi	7		7
	IAM 751	Special Topics: Advanced Mathematical Methods in Finance	Gerhard W. Weber	3	1	4
	IAM 753	Special Topics: Stochastic Energy Pricing Models	Martin Rainer	1	1	2

Anabilim Dalı	Dersin Kodu	Dersin Adı	Öğretim Üyesi	Öğr. Sayısı		
				IAM	Diğ.	Top.
Aktüerya Bilimleri	IAM 521	Financial Management	A.Oran-S.Danışoğlu-N.Güner	28	2	30
	IAM 530	Elements of Statistics and Probability	Ceylan Yozgatlıgil	31	13	44
	IAM 541	Probability Theory	Yeliz Yolcu	17	3	20
	IAM 546	Actuarial Risk Theory	Sevtap Kestel	11	1	12
	IAM 582	Life Insurance Mathematics	Sevtap Kestel	11	-	11
	IAM 584	Advanced Actuarial Mathematics	Ömer Gebizlioğlu	6	-	6