Graduate Study at Bilkent University
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## Contents

Graduate Study at Bilkent University
- Graduate Schools
- Application for Admission
- Financial Assistance
- Visa Requirements for International Applicants

Research
- Research Facilities
- Research Centers
- Ongoing Externally Sponsored Research Projects

Graduate Programs

Graduate School of Economics and Social Sciences
- Business Administration
- Law
- Economics
- History
- International Relations
- Political Science
- Psychology
- Archaeology
- Philosophy
- Turkish Literature
- Translation and Interpreting
- Communication and Design
- Interior Architecture and Environmental Design
- Music

Graduate School of Engineering and Science
- Architecture
- Chemistry
- Materials Science and Nanotechnology
- Mathematics
- Molecular Biology and Genetics
- Neuroscience
- Physics
- Computer Engineering
- Electrical and Electronics Engineering
- Industrial Engineering
- Mechanical Engineering

Graduate School of Education

Campus Information
- The Bilkent Environs and Ankara
- Classical Music at Bilkent University
- Current Positions of Recent Ph.D. Graduates
Bilkent University is a nonprofit research university, widely recognized as the premier institution of higher education in Turkey. Located in the country's capital city Ankara, a vibrant metropolis of five million people, the university serves as a hub of academic, social, and cultural activity.

The language of instruction at Bilkent is English. The university has 13,000 students, and its teaching staff numbers around one thousand. International faculty members, who represent 40 countries, constitute more than a quarter of all academic staff. A growing body of full-time international and exchange students hailing from, at last count, 62 countries also contribute to the multicultural makeup of the university community.

Chief among the factors that ensure a high standard of education at Bilkent is a faculty actively engaged in research. In terms of publications per faculty member, Bilkent ranks high both in Turkey and internationally.

Bilkent University hires academic and administrative staff and admits students regardless of gender, race, ethnicity, religion, age, national origin, or physical disability to all the rights, privileges, programs, and activities generally accorded or made available to staff and students at the university.

A high proportion of Bilkent graduate students receive some form of financial support from the university. Graduate students who have completed their studies at Bilkent go on to find excellent jobs in Turkey and around the world at prominent universities, research institutes, and international organizations.

Bilkent actively invests in new educational and research technologies, and also maintains strong links with universities in the U.S. and Europe through joint academic programs, research projects, and seminars as well as student and faculty exchanges.


This catalog outlines the graduate programs offered at Bilkent University with a brief description of each program and a list of faculty members, their research areas, and selected publications. Applicants can also find herein information about application procedures, facilities at the university, amenities located in its environs, and the city of Ankara.

GRADUATE SCHOOLS

Graduate programs are organized and administered through the following graduate schools:

Graduate School of Economics and Social Sciences
Director: Dr. Halime Demirkan, Professor
Phone: +90 312 290 2226
E-mail: demirkan@bilkent.edu.tr

Graduate School of Engineering and Science
Director: Dr. Ezhan Karaşan, Professor
Phone: +90 312 290 1208
E-mail: mfbe@bilkent.edu.tr

Graduate School of Education
Director: Dr. Alipaşa Ayas, Visiting Professor
Phone: +90 312 290 2951
E-mail: apayas@bilkent.edu.tr

APPLICATION FOR ADMISSION

Bilkent University graduate programs offer admission to applicants who have the necessary qualifications and show promise of scholarly achievement. Each department establishes its own criteria for admission, and departmental listings include more detailed information about these requirements. The following are some of the admission requirements common to all departments:

- Submission of ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı/Academic Personnel and Postgraduate Education Entrance Exam) or GRE scores. GMAT scores are required for graduate programs in Business Administration.

- Fluency in written and oral English. Please see the websites of each graduate school for the list of accepted tests.

- Official transcripts.

- Recommendations from instructors or others qualified to evaluate academic ability.

Online applications are accepted at https://stars.bilkent.edu.tr/gradapp.

TUITION

The annual tuition for the 2017-2018 academic year is 14,500 USD for international students and 33,200 TL for Turkish students (including value-added tax).

FINANCIAL ASSISTANCE

Currently, about 90 percent of graduate students receive financial support. Financial assistance is provided in the form of a tuition waiver or a tuition waiver plus a monthly stipend. The amount of the stipend is adjusted annually to cover changes in the cost of living.

Both admission and financial assistance are based on academic accomplishment and scholarly promise, without regard to gender, race, ethnicity, religion, age, national origin, or physical disability.

VISA REQUIREMENTS FOR INTERNATIONAL APPLICANTS

Students may need a visa, depending on Turkey's visa regime with their home country. Students must contact the Turkish Embassy/Consulate in their country and submit their acceptance letters in order to find out if they need to obtain a visa.
Bilkent Library

The Bilkent University Library is a lending and research library, with open stacks permitting free access to the entire collection (with the exception of the rare book collections). The main library, housed in its own four-story building and annex at the center of the Main Campus, is open throughout the year from 8:30 to 23:30 on weekdays and from 9:00 to 23:30 on weekends. Interlibrary Loan, the Official Publications Room, the Halil İnalcık Collection, the Hasan Âli Yücel Collection, and Special Collections have their own working hours. The East Campus branch library, located on the basement floor of the School of English Language, is open 8:30 to 17:00 on weekdays and is closed on weekends. Summer hours may be subject to change.

Bilkent Library was the first Turkish university library to offer its readers automated services through an integrated computer system. It provides use of an online public catalog to all readers via computer terminals both in the libraries and elsewhere on campus as well as to researchers anywhere in the world via the Internet. Internet access is also available in both libraries. The library catalog can be accessed from the library’s website.

The collection contains over 1,500,000 items. The book collection includes more than 490,000 printed volumes and over 470,000 electronic books. The library subscribes to over 750 print journals from the U.S. and Europe, and provides electronic access to more than 135,000 journals. $3 million is spent each year on books, journals, and other resources, including video and audio cassettes, DVDs and VCDs, maps, microforms, CD-ROMs, and music scores. The library also makes over 140 research databases available online. Many of these databases are acquired through the library’s membership in the Anatolian University Libraries Consortium. Working papers and technical reports are received from leading research centers in Europe, the USA, and Japan.

The Turkish Plastic Arts Archive makes available a file of over 50,400 newspaper clippings, magazine articles, and exhibition materials (invitations, posters, and catalogs). The collection has been catalogued and is accessible via the Internet.

The Bilkent University Library has been designated by the Library of Congress to receive U.S. Government Office of Publications documents and makes them available in the Official Publications Room. The library is also a depository for World Bank regional publications and houses the Bilkent European Union Information Center.

Reciprocal borrowing agreements with a number of Ankara-area universities make it possible for Bilkent graduate students and faculty members to borrow books from those libraries as well.

Computers capable of Internet access are located in the Reference and Current Periodicals Rooms of the Main Campus library for the purpose of searching e-resources and browsing the Internet.

The Main Campus library also houses an art gallery that regularly hosts academic and cultural events, as well as two cafes.

Computer Center

The Bilkent Computer Center (BCC) provides a variety of computing resources and services to meet the administrative, educational, and research computing requirements of the university community. These services include providing computational, networking, and internetworking equipment, as well as hardware and software maintenance for this equipment. Additionally, BCC develops in-house application software for the university, including the academic information system and the student information system.

More than 10,000 personal computers are distributed in offices, laboratories, and dormitories throughout the campus, and all are connected to BILNET, the Bilkent intranet.

Approximately 900 computers in 23 laboratories are administered by BCC and are available to faculty and students 24 hours a day throughout the academic year. All users have access to laser printer pools available in BCC labs and the Computer Center. In addition to the BCC labs, many departments, schools, and institutes maintain separate educational and research labs. All computers in these laboratories have BILNET and Internet access.

Bilkent University’s networking facilities extend to the dormitories as well. All campus dormitory rooms are Ethernet-wired, and students living in the dormitories can connect their own computers to BILNET and the Internet.

BCC provides and maintains a wide variety of scientific tools for research use. These include statistical, mathematical, and simulation libraries and packages complete with various VLSI and graphics design and imaging tools. All current and classical programming languages and development tools are available on various hardware platforms. State-of-the-art word processor, spreadsheet, database application, and presentation graphics software are available in the labs.

Some software developed in-house is also available to faculty, students, and staff. AIRS (the Academic Information Review System) and SRS (the Student Review System) help faculty and students plan their course loads and indicate academic preferences. ORS (the Online Registration System) enables students to view and register for courses. DAIIS (the Department Academic Information System) assists departments in managing their course offerings and course enrollment numbers.

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RESEARCH CENTERS

Acoustics and Underwater Technologies Research Center
Director: Dr. Abdullah Atalar, Professor
Phone: +90 312 290 2457
E-mail: basta@bilkent.edu.tr

Ahmed Adnan Saygun Center for Music Research and Education
Acting Director: Dr. Kağan Korad, Associate Professor
Phone: +90 312 290 1387
E-mail: korad@bilkent.edu.tr

Center for Research in Transitional Societies
Director: Dr. Orhan Güvenen, Professor
Phone: +90 312 290 1660
E-mail: gorhan@bilkent.edu.tr

Center for Turkish Literature
Acting Director: Dr. Mehmet Kalpakli, Associate Professor
Phone: +90 312 290 2317
E-mail: temerkez@bilkent.edu.tr

Center for Turkish Politics and History
Director: Dr. Metin Heper, Professor
Phone: +90 312 290 1857
E-mail: heper@bilkent.edu.tr

Communications and Spectrum Management Research Center
Director: Dr. Ayhan Altıntaş, Professor
Phone: +90 312 290 2458
E-mail: altintas@ee.bilkent.edu.tr

Halil İnalcık Center for Ottoman Studies
Director: Dr. Mehmet Kalpakli, Associate Professor
Phone: +90 312 290 2206
E-mail: kalpakli@bilkent.edu.tr

Institute of Materials Science and Nanotechnology
Director: Dr. Hilmi Volkan Demir, Professor
Phone: +90 312 290 2513
E-mail: unam@unam.bilkent.edu.tr

Institute of World Systems, Economies and Strategic Research
Director: Dr. Orhan Güvenen, Professor
Phone: +90 312 290 1660
E-mail: gorhan@bilkent.edu.tr

Nanotechnology Research Center
Director: Dr. Eknel Ozbay, Professor
Phone: +90 312 290 1966
E-mail: nanotechnology@bilkent.edu.tr

National Magnetic Resonance Research Center
Director: Dr. Adnan Akay, Professor
Phone: +90 312 290 1154
E-mail: aydan@ee.bilkent.edu.tr

ONGOING EXTERNALLY SPONSORED RESEARCH PROJECTS

Quantifying and protecting the privacy of genomic data. Funding Agency: European Commission, Principal Investigator: Erman Ayday.

PRACE 4: The partnership for advanced computing-first implementation phase. Funding Agency: European Commission, Principal Investigator: Cevdet Aykanat.

Investigating the effect of interface structure on friction at the nanoscale. Funding Agency: European Commission, Principal Investigator: Mehmet Baykara.

Control of triboelectricity from micro to macro as a principle of sticking, particulate contamination and esd prevention of micromachines. Funding Agency: European Commission, Principal Investigator: Tarık Çıtkok.

The role of urbanization in female empowerment: the Turkish case in comparative perspective. Funding Agency: European Commission, Principal Investigator: Kürşat Çınar.

Perceptual representation of illumination, shape and material. Funding Agency: European Commission, Principal Investigator: Katja Doerschner.

Coding for multi-user channels for next generation wireless networks. Funding Agency: European Commission, Principal Investigator: Tolga Duman.

Programmable droplet-based lab-on-a-chip systems. Funding Agency: European Commission, Principal Investigator: Çağlar Elbüken.

The RNA bridge between IRE1 and PKR leading to metflammatation: discovery and intervention in atherosclerosis. Funding Agency: European Commission, Principal Investigator: Ebru Erbay.

Elastic and transparent scaling for stream processing applications. Funding Agency: European Commission, Principal Investigator: Buğra Gedik.

Profiling with nanoelectromechanical systems. Funding Agency: European Commission, Principal Investigator: Selim Hanay.

Graphene based smart surfaces: From visible to microwave-smarGrathene. Funding Agency: European Commission, Principal Investigator: Coşkun Kocabaş.

Nonlinear laser lithography. Funding Agency: European Commission, Principal Investigator: Fatih Omer Ilday.

Energy efficient FPGA accelerators for graph analytics applications. Funding Agency: European Commission, Principal Investigator: Mustafa Ozdal.

Econometric modelling of short panels with applications in financial econometrics. Funding Agency: European Commission, Principal Investigator: Dimitris Tsarouhas.

Enhancing chemotherapy response in triple negative breast cancer (TNBC) by modulating miRNA-target network and identifying biomarkers of response. Funding Agency: European Commission, Principal Investigator: Özgür Şahin.
Magnetic particle imaging for safe angiography. Funding Agency: European Commission, Principal Investigator: Emine Ulku Saritas.

Use of continuous feedback markov fluid queues for performance modeling of computer and communication systems. Funding Agency: TUBITAK, Principal Investigator: Nail Akar.

Homogeneous hydrogen photo-generation by BODIPY based photo-induced electron Mirractransfer systems. Funding Agency: TUBITAK, Principal Investigator: Engin Umut Akkaya.


An investigation of the causes and effects of violence against women within an economic modeling framework. Funding Agency: TUBITAK, Principal Investigator: Pelin Akyol.


BacGenTrack - An integrated system for Bacterial Genome Tracking using high throughput sequencing technology; from identification to visualization. Funding Agency: TUBITAK, Principal Investigator: Can Alkan.

Functional nanodecoration of the cyclodextrin based electrospun hybrid fibers. Funding Agency: TUBITAK, Principal Investigator: Osman Arslan.

Customized class-e digital power amplifier array for magnetic resonance imaging. Funding Agency: TUBITAK, Principal Investigator: Ergin Atalar.

Zero echo time magnetic resonance imaging using active decoupling technique. Funding Agency: TUBITAK, Principal Investigator: Ergin Atalar.

Robust and privacy preserving decision support systems. Funding Agency: TUBITAK, Principal Investigator: Ermann Ayday.

High performance tensor decomposition methods for distributed and shared memory systems. Funding Agency: TUBITAK, Principal Investigator: Cevdet Aykanat.

High-performance parallel graph analytics kernels for big data applications. Funding Agency: TUBITAK, Principal Investigator: Cevdet Aykanat.

Optimization of latency-centric communication metrics towards petascale sparse iterative solvers. Funding Agency: TUBITAK, Principal Investigator: Cevdet Aykanat.

Investigating graphene covered with self-assembled monolayer structures via STM and testing its use as a chemical sensor. Funding Agency: TUBITAK, Principal Investigator: Mehmet Baykara.

Developing an atomic force microscope for biological research. Funding Agency: TUBITAK, Principal Investigator: Mehmet Baykara.

Lignin as an antistatic additive for polymers. Funding Agency: TUBITAK, Principal Investigator: Bilge Baytekin.

Chemically and mechanically controlled pattern formation in gels. Funding Agency: TUBITAK, Principal Investigator: Bilge Baytekin.

Cellulose-metal nanoparticle and cellulose-synthetic polymer-metal nanoparticle composites via mechnochemical reactions. Funding Agency: TUBITAK, Principal Investigator: Bilge Baytekin.

Reversible mechanochromic reactions and their applications as mechanical deformation sensors. Funding Agency: TUBITAK, Principal Investigator: Bilge Baytekin.


Contribution of triboelectricity on friction at nano and meso scale. Funding Agency: TUBITAK, Principal Investigator: Tarak Baytekin.

Mapping the turkish welfare state through original data generation. Funding Agency: TUBITAK, Principal Investigator: Hasan Togpa Bulukbas.

Theoretical study of electron spin resonance and spin noise in embedded InGaAs quantum dots. Funding Agency: TUBITAK, Principal Investigator: Ceyhun Bulutay.

Atomic resolution structural analysis and quantum control in quantum dots using computational nuclear magnetic resonance. Funding Agency: TUBITAK, Principal Investigator: Ceyhun Bulutay.

Predicting social reaction and its labels for a given news article by using microblogs. Funding Agency: TUBITAK, Principal Investigator: Fazli Can.

Automatic scene segmentation. Funding Agency: TUBITAK, Principal Investigator: Aaron Clarke.

The role of environmental statistical regularities in stable and efficient visual perception. Funding Agency: TUBITAK, Principal Investigator: Jennifer Corbett.

Targeting purinergic and toll-like receptors for the development of novel vaccine adjuvant formulations. Funding Agency: TUBITAK, Principal Investigator: Caglar Ceci.

Identification of functional links between adenosine A2A receptor and interleukin 7 receptor. Funding Agency: TUBITAK, Principal Investigator: Caglar Ceci.

Adenosine receptor targeting on CD8 T cells for anti-cancer therapy. Funding Agency: TUBITAK, Principal Investigator: Caglar Ceci.

The production, dynamics and key concepts of current Islamic political thought in Turkey: civilization, justice and order. Funding Agency: TUBITAK, Principal Investigator: Alev Cinar.

Design and development of an online database for genome-scale reconstructed metabolic networks. Funding Agency: TUBITAK, Principal Investigator: Erkument Cicek.

Using the 3D structure of DNA to associate single nucleotide polymorphisms with autism spectrum disorder. Funding Agency: TUBITAK, Principal Investigator: Erkument Cicek.


Coding and modulation for interference channels. Funding Agency: TUBITAK, Principal Investigator: Tolga Duman.

Three dimensional and spectral characterization of plasmonic nanostructures using nitrogen vacancy centers. Funding Agency: TUBITAK, Principal Investigator: Aykutlu Dana.

Nanomechanical characterization of osteogenic differentiation of mesenchymal stem cells. Funding Agency: TUBITAK, Principal Investigator: Aykutlu Dana.

Singular varieties related to K3-surfaces. Funding Agency: TÜBİTAK, Principal Investigator: Alexander Degtyarev.

High-performance optical gain and lasing from colloidal quantum wells. Funding Agency: TÜBİTAK, Principal Investigator: Hilmi Volkan Demir.

Field dependent properties of low-dimensional semiconductor nanoparticles: colloidal synthesis, design, fabrication and characterization. Funding Agency: TÜBİTAK, Principal Investigator: Hilmi Volkan Demir.

Plasmonic and excitonic study of coupled nanocrystals and nanoplatelets. Funding Agency: TÜBİTAK, Principal Investigator: Hilmi Volkan Demir.

Understanding and controlling the reactivity of the calcium silicate phases at the nanoscale. Funding Agency: TÜBİTAK, Principal Investigator: Engin Durgun.

Investigation of the new emerging 2D material properties aimed for optoelectronic applications. Funding Agency: TÜBİTAK, Principal Investigator: Engin Durgun.

300-W, picosecond fiber laser for ultra-high-speed, non-thermal processing of metals. Funding Agency: TÜBİTAK, Principal Investigator: Parviz Elahi.

Theoretical and experimental study on a novel synchronously-pumped Raman fiber laser. Funding Agency: TÜBİTAK, Principal Investigator: Parviz Elahi.

Development of a point-of-care device for coagulation time and erythrocyte sedimentation rate measurement. Funding Agency: TÜBİTAK, Principal Investigator: Çağlar Elbüken.

Generation of monodisperse droplets in microfluidic systems. Funding Agency: TÜBİTAK, Principal Investigator: Çağlar Elbüken.

Using electrostatic forces to manipulate and organize various types of nanoparticles and composite nanostructures to form multi-functional smart surfaces. Funding Agency: TÜBİTAK, Principal Investigator: Yegam Erdem.

Development of a portable lab-on-a-chip system for genetic diagnostics and compatible HBV diagnostic kits. Funding Agency: TÜBİTAK, Principal Investigator: Yegam Erdem.

Low-cost multilane refreshable braille displays for the visually impaired. Funding Agency: TÜBİTAK, Principal Investigator: Ahmet Can Erten.

Heterogeneous parallel and distributed computing with Java. Funding Agency: TÜBİTAK, Principal Investigator: Buğra Gedik.

Orthogonal polynomials associated with continuous singular measures and related problems. Funding Agency: TÜBİTAK, Principal Investigator: Alexander Goncharov.

Hidden Markov model and perturbation analysis applications in inventory control. Funding Agency: TÜBİTAK, Principal Investigator: Kagan Gökşayrak.

Identifying oncogenic and metastatic potentials of IKK-related kinases in hepatocellular carcinoma. Funding Agency: TÜBİTAK, Principal Investigator: Serkan İsmail Göktuna.

Identifying roles of IKK-related kinases IKKBKE and TBK1 in colorectal cancer metastasis. Funding Agency: TÜBİTAK, Principal Investigator: Serkan İsmail Göktuna.


Understanding and controlling the friction at nanoscale using graphene and graphene like two dimensional systems. Funding Agency: TÜBİTAK, Principal Investigator: Oğuz Gülseren.

Prototype LED chip development. Funding Agency: TÜBİTAK, Principal Investigator: Oğuz Gülseren.

Design of novel graphene like two dimensional materials based on heterostructures of transition metal dichalcogenides. Funding Agency: TÜBİTAK, Principal Investigator: Oğuz Gülseren.

Understanding the realistic plasmonic properties of metal nanoparticles beyond the model systems for photovoltaic and solar cell applications. Funding Agency: TÜBİTAK, Principal Investigator: Oğuz Gülseren.

The design, fabrication and measurements of high efficiency leds for backplane lighting in smart screens. Funding Agency: TÜBİTAK, Principal Investigator: Oğuz Gülseren.

Formation and development of attachment mental representations in adulthood: using the reverse correlation technique to uncover visual representations. Funding Agency: TÜBİTAK, Principal Investigator: Gül Günaydın.

The role of idiosyncratic experiences in representations of trustworthy faces. Funding Agency: TÜBİTAK, Principal Investigator: Gül Günaydın.

Adult attachment formation: development of vocal and physiological synchrony. Funding Agency: TÜBİTAK, Principal Investigator: Gül Günaydın.

Mass and shape analysis with nanoelectromechanical systems. Funding Agency: TÜBİTAK, Principal Investigator: Selim Hanay.

A nanomechanical sensor system operating at large oscillation amplitudes. Funding Agency: TÜBİTAK, Principal Investigator: Selim Hanay.

Reversible logic gates with nanoelectromechanical systems. Funding Agency: TÜBİTAK, Principal Investigator: Selim Hanay.

High accuracy and fast magnetic resonance electrical properties tomography. Funding Agency: TÜBİTAK, Principal Investigator: Yusuf Ziya İder.


Multidimensional control of complex dissipative nonlinear dynamics in mode-locked lasers. Funding Agency: TÜBİTAK, Principal Investigator: Fatih Ömer İlday.

Development of viable methodologies to form complex materials/structures by investigation on dynamical (dissipative) self-assembly processes. Funding Agency: TÜBİTAK, Principal Investigator: Serim Kayacan İlday.

Russo-Turkish war of 1877-1878 and its diplomatic implications for European history. Funding Agency: TÜBİTAK, Principal Investigator: Onur Işıç.

Development of burst-mode fiber laser system for material processing. Funding Agency: TÜBİTAK, Principal Investigator: Hamit Kalaycıoğlu.

The synthesis, characterization, and investigation of water-oxidation capacities of coordination compounds incorporating pentacyanometalate building block. Funding Agency: TÜBİTAK, Principal Investigator: Ferdi Karadaş.

Aldosterone and mineralocorticoid receptor: Pathophysiology, clinical implication and therapeutic innovations. Funding Agency: TÜBİTAK, Principal Investigator: Özlü Konu Karakaşlı.

Ion channels and immune response toward a global understanding of immune cell physiology and for new therapeutic approaches. Funding Agency: TÜBİTAK, Principal Investigator: Özlü Konu Karakaşlı.

Plug-in hybrid electric vehicle routing and recharging station location. Funding Agency: TÜBİTAK, Principal Investigator: Oya Karaşan.

Design and fabrication of polycrystalline diamond micro cutting tools. Funding Agency: TÜBİTAK, Principal Investigator: Yiğit Karpat.

Machining of nano scale structures on large surfaces using diamond tools with engineered cutting edges. Funding Agency: TÜBİTAK, Principal Investigator: Yiğit Karpat.

Developing a decision support system that uses expert judgments and incorporates equity concerns in various resource allocation settings where equity concerns on multiple dimensions exist. Funding Agency: TÜBİTAK, Principal Investigator: Oziem Karsiş.

Investigation of the effect of crystal thickness on the Metal-Insulator transition in VO2 nanocrystals and fabrication of a novel VO2 Mott field-effect transistor. Funding Agency: TÜBİTAK, Principal Investigator: Talip Serkan Kasişiga.

Investigating the effects of hydrogen doping on vanadium dioxide nanocrystals. Funding Agency: TÜBİTAK, Principal Investigator: Talip Serkan Kasişiga.

Controlling the optical properties of graphene using novel capacitor structures. Funding Agency: TÜBİTAK, Principal Investigator: Coşkun Kocabaṣ.

Graphene based electrically tunable radar surfaces. Funding Agency: TÜBİTAK, Principal Investigator: Coşkun Kocabaṣ.

Graphene based THz optoelectronics. Funding Agency: TÜBİTAK, Principal Investigator: Coşkun Kocabaṣ.


High resolution ultrasound imaging for detection of microcalcifications in breast cancer screening. Funding Agency: TÜBİTAK, Principal Investigator: Hayrettin Köymen.

Design of capacitive micromachined ultrasonic transducer (cmut) arrays in uncollapsed and collapsed modes. Funding Agency: TÜBİTAK, Principal Investigator: Hayrettin Köymen.

A comprehensive national macroeconomic model for Turkish economy: A system dynamic based simulation analysis. Funding Agency: TÜBİTAK, Principal Investigator: Syed Mahmud.

Mathematical modeling approaches for metabolic cholesterol synthesis and its applications on a colon cancer cell. Funding Agency: TÜBİTAK, Principal Investigator: Meltem Gölğeli Matur.


Cooling atoming and molecular gases via dipolar interactions. Funding Agency: TÜBİTAK, Principal Investigator: Mehmet Özgür Öktel.

Strongly time dependent many particle systems. Funding Agency: TÜBİTAK, Principal Investigator: Mehmet Özgür Öktel.

Bilkent BEST (Basic Entrepreneurship Skills Training). Funding Agency: TÜBİTAK, Principal Investigator: Orsan Orge.

Gan based $\$-$band low noise amplifier development. Funding Agency: TÜBİTAK, Principal Investigator: Ekmel Özbã.

Non-linear metamaterial development. Funding Agency: TÜBİTAK, Principal Investigator: Ekmel Özbay.

Development of active fatonic metamaterials. Funding Agency: TÜBİTAK, Principal Investigator: Ekmel Özbay.

Development of quantum cascade laser and production of prototype. Funding Agency: TÜBİTAK, Principal Investigator: Ekmel Özbay.

Robust control of time delayed linear parameter varying systems via switched controllers. Funding Agency: TÜBİTAK, Principal Investigator: Hitay Özbay.

Cheap, printable and bio-inspired ambulatory miniature robots. Funding Agency: TÜBİTAK, Principal Investigator: Onur Özcan.

Joint design and analysis of miniature robots manufactured with non-conventional manufacturing methods. Funding Agency: TÜBİTAK, Principal Investigator: Onur Özcan.

Energy efficient processor architecture for big data graph applications. Funding Agency: TÜBİTAK, Principal Investigator: Mustafa Özbãl.

Public opinion on turkish foreign policy: global, regional and local preferences. Funding Agency: TÜBİTAK, Principal Investigator: İbrahim Özgür Özdamar.

Pd-promoted perovskite based catalysts for automotive nox emission abatement. Funding Agency: TÜBİTAK, Principal Investigator: Emrah Özensoy.

A novel alternative for the existing homogeneous catalysts for ultra-high H2 production from formic acid. Funding Agency: TÜBİTAK, Principal Investigator: Emrah Özensoy.

NOx storage and reduction catalysts functionalized with CeO2-Zr=2: influence of promoters on surface species and catalytic behavior. Funding Agency: TÜBİTAK, Principal Investigator: Emrah Özensoy.

Modeling foraging swarm behavior as a nash equilibrium of a dynamic game. Funding Agency: TÜBİTAK, Principal Investigator: Bülent Özgüler.

Software and hardware solutions for safety critical applications. Funding Agency: TÜBİTAK, Principal Investigator: Özcan Öztürk.
Ultrafast 3D micromachining for solar cells. Funding Agency: TÜBİTAK, Principal Investigator: İhor Pavlov.


Interventions guided by magnetic imaging and nanoparticle coated equipment. Funding Agency: TÜBİTAK, Principal Investigator: Emine Ulku Saritas.

Magnetic active nanochains for nanobiomedicine. Funding Agency: TÜBİTAK, Principal Investigator: Emine Ulku Saritas.

Magnetic particle imaging for cancer imaging: sensing local diffusion effects. Funding Agency: TÜBİTAK, Principal Investigator: Emine Ulku Saritas.


Algebraic and combinatorial properties of modular coinvariant rings. Funding Agency: TÜBİTAK, Principal Investigator: Müfit Sezer.


Operando X-ray photoelectron and FTIR spectroscopic investigation of graphene and other 2D materials and devices. Funding Agency: TÜBİTAK, Principal Investigator: Şefik Süber.

Combinatorial targeting of PI3K and MAPK signaling pathways by micromas to inhibit tumor growth and metastasis in breast cancer. Funding Agency: TÜBİTAK, Principal Investigator: Özgür Şahin.

Identifying and targeting sponge long non-coding rnas to inhibit metastasis in triple negative breast cancer using a systems biology approach. Funding Agency: TÜBİTAK, Principal Investigator: Özgür Şahin.

Elucidating the mechanisms of sequential trastuzumab/TDM1 resistance in vitro and in vivo models of HER-2 overexpressing breast cancer. Funding Agency: TÜBİTAK, Principal Investigator: Özgür Şahin.

Identifying and targeting long non-coding rnas in playing role in tamoxifen resistance in ER-positive breast cancer using in vitro and in vivo assays. Funding Agency: TÜBİTAK, Principal Investigator: Özgür Şahin.


Developing synthetic gene circuits and whole-cell sensors to determine and monitor nanotoxicity caused by nanomaterials. Funding Agency: TÜBİTAK, Principal Investigator: Urartu Özgür Şafak Şeker.


Whole cell sensors for biomedical applications using synthetic biology tools. Funding Agency: TÜBİTAK, Principal Investigator: Urartu Özgür Şafak Şeker.

Controlling protein aggregate forming kinetics and thermodynamics in amyloids using peptides ligands to be selected using yeast surface display and phage display approaches. Funding Agency: TÜBİTAK, Principal Investigator: Urartu Özgür Şafak Şeker.


Modelling of hybrid energy systems with pumped hydro storage; a case study for Turkey. Funding Agency: TÜBİTAK, Principal Investigator: Urartu Özgür Şafak Şeker.

Learning optimal personalized diagnosis and treatment through big data. Funding Agency: TÜBİTAK, Principal Investigator: Cem Tekin.

Investigation of nerve growth factor binding peptide nanofibers on neural differentiation of neural stem cells. Funding Agency: TÜBİTAK, Principal Investigator: Ayşe Begüm Tekinay.

Utilization of peptide nanostructures for generating antigen specific immune response. Funding Agency: TÜBİTAK, Principal Investigator: Ayşe Begüm Tekinay.

The use of bioactive peptide nanofibers in articular cartilage regeneration. Funding Agency: TÜBİTAK, Principal Investigator: Ayşe Begüm Tekinay.

Hierarchical isogeometric analysis technology and computational contact mechanics. Funding Agency: TÜBİTAK, Principal Investigator: İlker Temizer.

Multiscale analysis and micro-texture design for lubrication interfaces. Funding Agency: TÜBİTAK, Principal Investigator: İlker Temizer.

Laser micromachining using spatial light modulators for solar cells. Funding Agency: TÜBİTAK, Principal Investigator: Onur Tokel.


Investigation of nerve growth factor binding peptide nanofibers on neural differentiation of neural stem cells. Funding Agency: TÜBİTAK, Principal Investigator: Dönüş Tuncel.

Investigation of substrate-catalyst interactions in the field of organocatalysis based on non-covalent interactions. Funding Agency: TÜBİTAK, Principal Investigator: Yunus Emre Türkmen.

Utilization of orthogonal hydrogen and halogen bonding pairs in photochemical reactions. Funding Agency: TÜBİTAK, Principal Investigator: Yunus Emre Türkmen.

Surface decoration of metal nanoparticles onto electrospun nanofibers/nanowebs and their properties as catalysts. Funding Agency: TÜBİTAK, Principal Investigator: Tamer Uyar.

Application of electrochemical noise measurements to batteries. Funding Agency: TÜBİTAK, Principal Investigator: Burak Ülgüt.


Developing a game theoretical modeling and simulation framework for the integration of unmanned air vehicles into the national airspace. Funding Agency: TÜBİTAK, Principal Investigator: Yıldırım Yildiz.


Preparation of silicon-carbon nanobber composite anode materials for lithium-ion batteries with high energy capacity. Funding Agency: TÜBİTAK, Principal Investigator: Eda Yılmaz.

Investigating the mechanical properties of GaN sub-micron/nano wires nanofabricated from GaN thin-films grown by PA-ALD. Funding Agency: TÜBİTAK, Principal Investigator: Mehmet Yılmaz.

Investigating TAGLN gene function in breast cancer and its evaluation as a diagnostic and prognostic marker. Funding Agency: TÜBİTAK, Principal Investigator: İşik Yuluğ.

Impact of caloric restriction on age-related alterations in synaptic integrity underlying cognitive decline in zebrafish. European Molecular Biology Organization, Principal Investigator: Michelle Adams.

Turquality. Funding Agency: Finansbank, Principal Investigator: Levent Akdeniz.

Development of a carrier tracking system for satellite communication. Funding Agency: Türksat, Principal Investigator: Orhan Arıkan.

Data publication. Funding Agency: Turk Telekom, Principal Investigator: Erman Ayday.

Immune cell regulation by purinergic signaling. Funding Agency: European Molecular Biology Organization, Principal Investigator: Çağlar Çekiç.

Neural representation of information in the human brain during natural vision. Funding Agency: European Molecular Biology Organization, Principal Investigator: Tolga Çukur.

Development of compressive sensing magnetic resonance imaging technologies. Funding Agency: Aselsan, Principal Investigator: Tolga Çukur.

SAYP-OSUNLUK. Funding Agency: BLF Optik, Principal Investigator: Ekmel Özbay.

Using processing trade to facilitate innovation in response to a competitive shock. Funding Agency: Newton, Principal Investigator: Fitnat Banu Pakel.


Genetic study of essential tremor. Funding Agency: NIH, Principal Investigator: Ayşe Begüm Tekinay.

Technology Transfer Office

The Bilkent University Technology Transfer Office (Bilkent TTO) aims to support technology transfer and catalyze economic development at Bilkent University through the commercialization of technology.

Bilkent TTO assists researchers in:
• preparing and submitting grant proposals to national and international agencies,
• collaborating with industry on R&D projects,
• protecting and commercializing intellectual property rights (most notably in the area of obtaining patents, as well as providing general know-how),
• establishing startups and engaging in entrepreneurial activities.

Director: Dr. Atilla Hakan Özdemir
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tto.bilkent.edu.tr
Several characteristics distinguish Bilkent University’s Faculty of Business Administration. First, the faculty is part of a young but ambitious university that has identified business education as an area of priority. Second, the faculty employs an excellent group of instructors with strong research and teaching records, and continues to recruit top-flight faculty members. Third, it attracts some of the best students in Turkey into its programs. Fourth, the location of the university in the capital of Turkey and the heartland of Anatolia in close proximity to a number of industrial centers as well as the national government provides the business faculty with a competitive advantage for collaboration with government and industry. Fifth, Turkey is one of the largest economies in the world, with an exceptionally high growth rate. These features provide an excellent environment for building a world-class business school, and Bilkent’s Faculty of Business Administration is determined to take full advantage of them. In addition, the Faculty of Business Administration offers a dual master’s program with Tilburg University in the Netherlands, providing a collaborative academic experience.

**FACULTY**

**LEVENT AKDENİZ**, Associate Professor. Ph.D., Economics, University of Houston, 1996. *Corporate finance, computational economics, numerical methods.*


**KÜRŞAT AYDOĞAN**, Professor and Vice Rector. Ph.D., Finance, Syracuse University, 1986. *Investments, corporate finance, international finance.*

**CEREN AYDOĞMUŞ**, Instructor. Ph.D., Business Administration, Hacettepe University, 2011. *Organizational psychology, marketing research, financial business applications.*


**BAĞİR ERMAN DEPECİK**, Assistant Professor. Ph.D., Marketing, Erasmus University, 2016. *Empirical Quantitative Modeling.*

**AHMET EKİÇİ**, Associate Professor. Ph.D., Marketing, University of Nebraska, 2002. *Public policy and marketing, relationship marketing, advertising.*


The M.B.A. program educates proficient managers and executives who can effectively recognize and “manage” the challenges presented by a continuously changing business environment. The goal is to provide a strong foundation of administrative and conceptual skills to prospective managers, preparing them to assume responsibility for planning, organizing, directing, and controlling the operation of public, private and nonprofit organizations. The M.B.A. degree can be viewed as a path to extend and enhance a wide variety of undergraduate experiences, including but not limited to majors in engineering, economics, and social sciences as well as business. The program’s emphasis is on analytical methods and problem solving rather than the mere description of the operations. The M.B.A. program is designed to provide a solid foundation for Ph.D. work.

Degree Requirements: M.B.A. candidates must complete a minimum of 27 credit hours of course work, prepare and defend a thesis, and maintain a cumulative GPA of at least 3.0/4.0. The standard duration of study for the M.B.A. in Business Administration is four semesters.

The M.B.A. degree is offered in three tracks: Finance, Marketing, and Decision Science/Operations Management.

The Ph.D. degree is offered in three tracks: Finance, Marketing, and Decision Science/Operations Management.

FIELDS OF STUDY

Finance

The field of finance is concerned with the study of allocation of capital as a resource. Research in finance may take many forms. Methodological research develops procedures involved in constructing and analyzing mathematical models that can prescribe or describe financial decision-making. Applied research fits models to specific, real settings in national or global contexts. The current research interests of our finance faculty include asset pricing, derivatives, risk management, global asset allocation, market efficiency, market microstructure, corporate governance, and banking and real estate finance. Both the theoretical and empirical sides of these research areas are investigated.

Marketing

The program in marketing emphasizes cultural, cross-cultural, and interdisciplinary research and methodological creativity and diversity. It focuses on understanding the complex dynamics that characterize markets, marketing, and consumption in the contemporary world through the scholarly study of the relationships among the global, regional, and local dimensions and manifestations of social, economic, political, and cultural processes and conditions. Students interested in developing an interdisciplinary perspective on various marketing issues, such as consumption, macromarketing, culture, representation of products and space “servicescapes,” retailing, and advertising, especially in the context of sociocultural change induced by modernization and globalization, are encouraged to apply. Doctoral students also have the opportunity to be affiliated with the Bilkent University Center for Research in Transitional Societies.

Decision Science/Operations Management

The field of operations management is concerned with the overall transformation process within an organization that converts resource inputs such as raw materials, labor, capital, and technology into finished goods and services. Decision science is a broad, interdisciplinary field of study concerned with decision-making and decision modeling. As such, this program draws on fields including computer science, economics, industrial engineering, management science, operations research, psychology, and political science. The current research interests of the faculty include supply chain management, numerical analysis of queuing systems, U-type and S-type assembly line design, quality control, decision-making and decision modeling. The program’s emphasis is on analytical methods and problem solving rather than the mere description of existing practices. Participative learning is emphasized through case analyses, term projects, simulations, classroom discussions, and summer internships. Computer applications, quantitative analysis, and behavioral science principles are integrated into the program to provide a thorough
background in the quantitative and qualitative aspects of management, with emphasis on the former. Graduates are equipped with the knowledge, skills, and analytical thinking abilities required to enhance the efficiency and effectiveness of the enterprises they will join.

Admission: Applicants to the program should have a B.S. or B.A. degree and demonstrate a high level of proficiency in English. Applicants are evaluated on the basis of their GMAT (Graduate Management Admission Test) / GRE (Graduate Record Examination) scores, academic records / ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı / Academic Personnel and Postgraduate Education Entrance Examination) scores, academic records, and an interview.

Degree Requirements: Those admitted to the program will be required to complete a minimum of 48 credit hours of course with a minimum cumulative grade point average of 3.00/4.00.

MASTER OF EXECUTIVE BUSINESS ADMINISTRATION (E.M.B.A) PROGRAM (Non-Thesis)

The Bilkent Executive M.B.A. program aims to cultivate in program participants a strategic perspective on managing in today’s global business environment. The program is designed to build a strong foundational executive skill set and an ability to integrate business functional area knowledge to cope with the challenges of the contemporary business world.

The program begins with a three day orientation geared toward building soft skills, such as teamwork, negotiation, communication, and conflict resolution, through various activities. Participants are exposed to foundational courses, including management, quantitative methods and financial reporting, marketing, and finance. Integrative courses are designed to combine strategic material from a number of functional areas and are taught by multiple instructors. The program concludes with a one-week global business application camp and a strategy simulation that requires participants to lead a global company.

The schedule is designed to accommodate the specific needs of executives. During the academic year, classes take place on Friday afternoons and Saturdays every other week.

Admission: Applicants to the program are required to have a bachelor’s degree (BS or BA), minimum three years of managerial experience, and proficiency in English sufficient to follow the course material. Applicants should have strong communication and social skills, entrepreneurial and leadership qualities and aim to be top-level executives.

Degree Requirements: Participants admitted to the program will be required to complete a minimum of 41 credit hours of course with a minimum cumulative grade point average of 3.00/4.00.

COURSE DESCRIPTIONS

MAN 525 Financial Economics
This course covers the theoretical foundations of modern financial economics. The focus is on financial markets and the valuation of financial claims traded in those markets, under discrete time models. Topics analyzed include models of consumption and investment decisions under uncertainty; risk aversion; stochastic dominance; mean variance theory; equilibrium models of asset pricing (CAPM, ICAPM, APT); linear multifactor models; and incomplete markets.

MAN 627 Seminars in Corporate Finance
It is a doctoral seminar course covering major theories and empirical studies that have been developed in the area of corporate finance. The aim is to teach a class that will generate research ideas.

MAN 628 Advanced Empirical Finance
It is a doctoral seminar course covering major theories and empirical studies that have been developed in the area of investment theory. The aim is to teach a class that will generate research ideas.

MAN 629 Seminar in Financial Intermediation
It is a doctoral seminar course covering major theories, recent developments and empirical studies that have been developed in the area of financial intermediation. The aim is to teach a class that will generate research ideas.

MAN 631 Marketing Theory
This course aims to develop fundamental knowledge of and about marketing as a field of study and provoke critical thinking about the field. Readings and discussions examine the historical development of marketing thought and theory, as well as contemporary issues, alternative perspectives, and critical insights. The course considers the philosophical foundations of marketing practice and marketing thought and issues of scholarship and science in marketing. The course is interactive and involves critical discussion of the readings during both lectures and student presentations. Students search for possible dissertation topics and develop a preliminary dissertation proposal.

MAN 633 Seminar in Marketing Strategy
This course is designed to provide doctoral students with a foundation in marketing strategy research. This course will identify, review, and critique a variety of theoretical perspectives that can be applied to areas including firm capabilities, marketing channels, strategic alliances, and firm boundaries.

MAN 634 Consumer Behavior Theory I
MAN 636 Consumer Behavior Theory II
This course deals with the understanding of the behavior, attitudes, preferences and decision making processes of people as consumers and psychological theories underlying consumer behavior. Some strategic implications of consumer preference formation, judgment and decision making are also addressed. Understanding consumers is a critical component of marketing to implement efficient marketing strategies. Principles from psychology as well as other social sciences are integrated to analyze consumer behavior.

MAN 639 Special Topics in Marketing I
MAN 640 Special Topics in Marketing II
This doctoral seminar covers major theories and studies in selected areas in the marketing field. The course reviews historical and contemporary approaches in the area and aims equip students with knowledge useful in generating research ideas.

MAN 656 Advanced Multivariate Statistics
The objective of this course is to introduce tools for multivariate analysis including multivariate ANOVA, principle components analysis, discriminant analysis, cluster analysis, factor analysis, structural equations modeling, canonical correlations and multidimensional scaling.

MBA 500 Bilcamp
This is an extended MBA orientation. It will be used to review some background that is important for the program, as well as team building. It will be run as a one-credit orientation course during the week before classes start in September. Possible skills components to be included are calculus review, basic statistics, intermediate excel (modeling), presentation skills, group skills (team work), research skills, leadership skills and emotional intelligence.

MBA 502 Macroeconomics
The objective of this course is to enable you to have an understanding of the macroeconomic environment in which businesses operates. We will cover topics like economic growth; unemployment; inflation; money supply; money demand; interest rates; trade; balance of payments; and
MBA 503 Business Economics
This course is designed to introduce the theory and practice of Microeconomics for MBA students. The topics covered include fundamental issues in Microeconomics. Theory of the consumer and the firm are the primary areas of the course. In addition, market structure, choice under uncertainty and some topics in financial economics will be covered.

MBA 504 Financial Risk Management
This course is a graduate level course focusing on the instrument of financial risk management. After taking this course participants will be able to understand the economic functions of derivatives markets and where they fit within the financial intermediation process. More specifically they will develop an understanding of the basic instruments like futures, forwards, options and some commonly used exotic derivatives. The course also aims to develop a working knowledge of the hedging strategies that could be implemented by the instruments introduced in the course.

MBA 511 Accounting
The need for accounting records and reports and the basic principles underlying the accounting cycle and preparation of financial statements. Emphasis is given to accounting as an aid to managerial decision making. In addition, topics such as budgeting, funds flow and the basics of cost accounting are discussed.

MBA 512 Managerial Accounting
The primary objective of this course is to teach the skills, tools and managerial insights for intelligent and ethical decision making. The course focuses on the information development and analysis, presenting and communicating information to make it useful, and bring in accounting, financial and business information into the decision process. As students learn the fundamental concepts of management accounting, an attempt is made to identify problems with current accounting and managerial conventions.

MBA 513 Financial Statement Analysis
This course aims at providing the student with the tools of financial and credit analysis. Analysis of the relation between financial accounting data and firm performance is emphasized. Characteristics of accounting ratios and their relations to market and industry factors, time series behavior of earnings and forecasting models are also investigated.

MBA 519 Financial Institutions and Markets
This course aims to investigate the history, structure and functions of financial institutions (banks, insurance companies, mutual funds, etc.) as well as central banking. It analyzes money, financial intermediaries, markets and recent banking legislation. Topics include why banks and other financial institutions exist, how asset prices are determined, what is the risk and term structure of interest rates and what is efficient market hypothesis. All major markets and their respective financial instruments are studied to develop the necessary quantitative toolset for sensible decision making in an increasingly global economy.

MBA 522 Corporate Finance
A course in the theory of corporate finance with emphasis on investment and financing decisions of the firm. Topics include valuation, capital budgeting, capital structure, cost of capital, dividend policy, financial statement analysis, profit planning, financial forecasting, and working capital management.

MBA 524 Investment Analysis
Risk and return characteristics of various investment instruments such as common stocks, bonds, convertibles and options are considered. Modern portfolio theory is discussed and related concepts are used in constructing portfolios for individual and institutional investors. Alternative portfolio management strategies and financial analysis and valuation of corporate securities are also covered.

MBA 526 International Finance
This course introduces the environment, theory and practice of international finance. The major topics covered are: the foreign exchange market and price elasticities of trade, the Keynesian Model of Income and the trade balance, the Monetary approach to the balance of payments, introduction to capital mobility: The Mundell-Fleming model. In the second part of the course international monetary system, the European monetary system, financial liberalization and stabilization in LDC's are covered.

MBA 531 Marketing Research
After a brief review of the examination of marketing information needs and resources including the collection and dissemination of primary and secondary data, this course focuses on quantitative research in marketing. More specifically, this course discusses problem definition, research design, sampling techniques, data collection and analysis. An overview of methods of measuring consumer reactions to project characteristics, effectiveness of advertising and other promotional devices are also discussed.

MBA 532 Marketing Management
Survey of the marketing concept, consumer behavior, segmentation, marketing research, competitive analysis, and marketing decisions involving products, price, distribution and promotion. Analytical, strategic and decision making aspects are emphasized. Cases are used for application of the principles discussed.

MBA 542 Production and Operations Management
Principles and decision analysis related to the effective utilization of the factors of production in manufacturing and non-manufacturing activities. The design, operation and control of production systems using mathematical, computational and other modern analytical techniques.

MBA 551 Probability and Statistics
Basic concepts in probability and statistical analysis. Topics include data analysis, Bayes theorem, discrete and continuous distributions, estimation, testing of hypotheses, analysis of variance, and regression analysis.

MBA 553 Data Models and Decisions
This course introduces students the fundamental techniques of using data and management science tools and models to think structurally about decision problems, make more informed management decisions, and enhance decision-making skills. Topics include linear, discrete, and non-linear optimization and simulation modeling, as well as multi-criteria optimization. Spreadsheet models and spreadsheet-based software packages will be used extensively.

MBA 561 Managing People and Organizations
Managing successfully in the chaotic and dynamic world of 21st Century business demands a wide range of management skills and understanding. This course will emphasize these new skills and understandings in its three major components: (1) The Fundamentals of Modern Management: concepts, theories, and models of effective management. (2) Competing by Design: organizational structure as the critical tool for implementing corporate strategies. (3) The Management of Organizational Behavior in order to achieve a competitive advantage. Emphasis will be placed on the practicalities of managing successfully in the 21st Century, as well as on the supporting research.
MBA 562 Managing People and Organizations
Human resource management (HRM) is one of the major functional areas in management. It is now widely accepted that all managers need to be aware of HRM to successfully deal with various managerial issues. In this course, it is aimed to give MBA students with little or no prior knowledge of HRM an academic understanding of the subject. The development of HRM as an academic field is critically explored in its historical context, with a special emphasis on the differences between personnel management and HRM. Various functions and dimensions of HRM (i.e. recruitment and selection, training and development, performance management, etc.) are defined and discussed, by using case studies and real examples both from Turkey as well as from abroad. Contemporary issues around HRM (e.g. discrimination and diversity, downsizing, industrial relations, etc.) are also explored. The course eventually aims to stimulate answers to the following questions: firstly, why and how is HRM one of the most significant management functions? And secondly, who does HRM in organizations? This course helps MBA students who want to extend their background in HRM, whether or not they plan to work as specialists in this area.

MBA 568 Entrepreneurship and Innovation Management
This course covers approaches to the study of entrepreneurship and discusses theories and practices to entrepreneurship as well as the wealth creation character and role of innovative entrepreneurship in the growth of economies. All aspects of entrepreneurship: from the influences on entrepreneurship development and the characteristics and behavior of the entrepreneur to developing intrapreneurship in organizations are discussed.

MBA 582 New Product Design and Marketing
New products and services are vital to the success of all companies and their brands. However, innovation is risky and most new products fail in the marketplace. Ineffective marketing is the primary cause of new products failures whose financial impact to the economy is significant. Thus, expertise in the marketing and design of new products is a critical skill for all managers, inside and outside of the marketing department. In this course, we focus on the tools and techniques associated with analyzing market opportunities and then designing, testing and introducing new products and services. Both quantitative and qualitative approaches are covered. In particular during the course, we’ll use real case studies and competitive team projects to understand and apply the new product development process, market entry strategies, how to generate new products ideas, mapping customer perceptions, segmentation, product positioning, forecasting market demand, and product design.

MBA 591 Business Strategy
A capstone course utilizing comprehensive cases as the means of integrating all aspects of strategic management. Synthesizes the previous training in functional areas to address the evaluation, formulation and implementation of corporate and business level strategies in relation to the firm’s environment.

MBA 592 Business Practice Project
The business practice course will require students to either complete a management consulting project or a business plan for an organization (company, government branch, NGO, or non-profit enterprise). Projects will be completed in groups of three or four. In this course, students will be able to propose a structured analysis, a decision support tool, a report, and/or other deliverables dictated by the organization in their terms of reference with the students.

MBA 672 Leadership for International Managers
This course aims at providing students with the knowledge and skills for recognizing leadership patterns and developing competencies and attitudes that will enhance their own competitiveness in the corporate arena and contribute to developing their personal managerial styles. It combines management theory and practical tools used by managers to carve a leading role for their organizations? Whether commercial enterprises or not-for-profit organizations? In the global environment, taking into consideration the impact of cultural diversity and the increasing importance of the emerging markets on drawing and implementing international strategies successfully.

MBA 673 International Business Strategy
Business conducted internationally entails the consideration of a far greater range of variables and associations than business conducted in the home country. Accordingly, in this course we study the environment, markets, institutions, challenges, strategy, and operations of international and cross-cultural business. We also examine the globalization of business and associated challenges posed for the competitiveness of the modern enterprise, as well as orientations, strategies, and tactics appropriate for international business success. Upon conclusion of this course, students should: (a) become sensitized to the urgency and challenges of international business for the contemporary enterprise; (b) have substantial understanding of fundamentals of international business with respect to major world markets, their environments and consumers; (c) understand basic managerial requirements for the successful performance of firms in international business; (d) be able to fit in quickly and perform in the international business operations of any firm.

MBA 677 Negotiating Skills for International Executives
This course aims at providing the students with knowledge and skills to understand the dynamics of cross-cultural negotiations in the global business environment and apply in practice proven techniques in a variety of circumstances. After an initial skill assessment of the participants, theory and cases inspired from real-life situations alternate in order to immerse the participants and equip them with first-hand experience. Role playing, feedback, self-evaluation, and multi-media aids are some of the pedagogical tools used. One-on-one, multiparty, cross-border, government, mediation, alternate conflict resolution approaches are addressed, to degrees tailored to the profile and needs of the students. The topic of negotiations in the work-place for personal achievement is also covered. Assignments are used for ongoing evaluation, and final examination is in the form of a short essay.

EMBA 502 EMBA Project
This applied course enables participants to put into practice the various functional area knowledge that they gained in their courses. With a macro-level strategic focus, this application is designed to enable participants to think about how their learning experiences in the program could be leveraged to identify and initiate business change and strategic improvement avenues in their own business and managerial contexts.

EMBA 515 Foundations of Organizational Management
This course serves as a general overview of managerial issues in modern business organizations. Structured around distinct organizational management domains, the course emphasizes the importance of effectively managing 1) employees (individuals and teams/groups), 2) organizational processes (motivation, leadership, communication, and learning), and 3) macro organizational design issues (structure and culture). The course also aims to serve as a platform for participants to start reflecting on their ongoing managerial practice, and comparing and connecting their practical managerial experience with the theoretical knowledge on organizational management that they are going to be exposed to in the course.

EMBA 516 Competitive Strategy
The main purpose of the course is to develop knowledge skills and abilities concerning the fundamentals in strategic
management. The general objectives of the course are to introduce to the key principles of strategic management, develop an understanding of the concepts, skills, and abilities that make strategies successful, develop an awareness of the critical importance of industry and competition analysis, develop knowledge and skills for evaluating strategic options in corporate growth decisions, involve in a variety of activities that will develop the ability to apply the concepts.

**EMBA 521 Business Law**
The participants of this course will learn the legal system and how to use legal advice for managerial decisions. Topics covered include principals of obligation law, concepts of “obligational relationship” and “obligation”, sources of obligations, formation and validity of legal transactions; particularly contracts, representation, torts and unjust enrichment. Basic concept of commercial enterprises law and negotiable instruments law, Partnerships and corporations, different aspects of public companies, legal issues related to competition, Principals of bankruptcy law, forcing of payments of debts, order of payment, forced sale and bankruptcy, Legality, sources and application of the criminal laws. General theory of crime; elements of crime, criminal responsibility; punishment, new perspectives in criminal law, especially in commercial criminal law area.

**EMBA 525 Managing Systems Effectively**
One of the key responsibilities of today’s global managers is to orchestrate the multitude of actors, resources and processes of business value creation systems. Based primarily on an operational perspective, this course aims to shed light on and integrate various interdependent facets of value creation to instill in participant a holistic and practice-oriented appreciation of issues in modern business systems management. With this goal the course examines key topics including supply chain, operations and logistics management; strategic human resource management; and, IT and managerial reporting processes.

**EMBA 535 Foundations of Quantitative Methods and Financial Reporting**
This course is built around fundamental quantitative and reporting tools to help executives become informed and strategic users of the managerial data supplied to them. To that end, participants are first introduced a framework for thinking about problems involving uncertainty and, building on this framework, and developing quantitative tools for analyzing and interpreting data. This analytical framework is also supported by various spreadsheet applications for managerial use. Building on this analytical foundation, participants then learn how to examine accounting records and reports and the basic principles underlying the accounting cycle and preparation of financial statements, with a general focus on how accounting can be used as an aid to strategic managerial decision making.

**EMBA 545 Foundations of Financial Management**
Participants of this course will develop a basic understanding of the financial management issues and problems in business organizations. To this end, the participants are first introduced the general functioning of the aggregate macroeconomic environment and how and through which changes in international financial environment affect local economy. The course then covers the role and functioning of the capital and money markets as a device for the allocation of resources, the channeling of investable funds, and reallocation of risk; finally, the course involves a basic introduction to financial mathematics and how financial securities are priced. Topics covered include interest rates, basic financial instruments, stock and bond pricing, concepts of return and risk and how they affect the managerial decision making process.

**EMBA 546 Strategic Financial Management**
This course is designed around the question of how to create value for your company and increase financial performance through strategic decisions such as investing in real assets with a thorough understanding of the risks involved, optimal mix of financing and how it relates to the markets and people, how to allocate financial resources among various stakeholders.

**EMBA 547 Decision Analysis**
This course integrates the managerial decision making process under uncertainty and many stakeholders through strategic financial decisions. Focused on descriptive and prescriptive approaches, it covers models in decision making, heuristics and biases, individual versus group decision making and tools for decision support.

**EMBA 555 Foundations of Marketing Management**
This course is crafted around the core elements and tools of marketing, such as market-focused culture, customer and competitor analysis, value delivery, pricing, relationship management, brand management, marketing communication and marketing analytics. For these purposes, the participants are introduced various frameworks to better understand and manage the nature and determinants of consumer behavior; branding, and sales management techniques. The course also provides opportunities for participants to reflect on and apply the course contents in their own business and managerial contexts.

**EMBA 556 Managing Markets, Growth and Change**
In today’s increasingly complex and dynamic global business environment, one haunting management challenge is to continually nurture market responsiveness and adaptation as key business competences. To help participants address these challenges, the course aims to examine various processes through which successful business organizations monitor, internalize, and respond to market dynamics. With this focus, the course examines topics such as market research; marketing strategy; new product development; innovation; business growth management; and, organizational change management.

**SAMPLE OF RECENT PUBLICATIONS**


Faculty Profile:

Dr. Erdal Erel,
Professor,
Faculty of Business Administration

Erdal Erel graduated from Istanbul Technical University in 1981, with a B.S. degree in industrial engineering. He received an M.S. degree in industrial engineering from Stanford University in 1983 and a Ph.D. in industrial engineering and operations research from Virginia Polytechnic Institute and State University in 1987. He joined the faculty of Bilkent University in 1989.

Prof. Erel served as director of the university’s Graduate School of Economics and Social Sciences from 2004 to 2015, and as dean of the Faculty of Business Administration from 2008 to 2016. His current research interests are in the fields of manufacturing systems design, sequencing and scheduling, and project management. He has published over 40 articles and received over 800 citations. His work has appeared in IIE Transactions, the European Journal of Operational Research, the International Journal of Production Research, Omega, Applied Mathematics and Computation, Computers and Industrial Engineering, Computers and Operations Research, the Journal of the Operational Research Society, the Journal of Intelligent Manufacturing, the International Journal of Production Economics, Production Planning and Control, the Annals of Operations Research, and Discrete Applied Mathematics.

Faculty Profile:

Dr. Celile İtir Göğüş,
Assistant Professor,
Faculty of Business Administration

Celile İtir Göğüş received a B.S. degree in management from Bilkent University in 1999 and an M.S. degree in human resource management from Texas A&M University in 2001. She completed a Ph.D. in management at the Mays Business School of Texas A&M University in 2005, where she subsequently worked as a postdoctoral researcher prior to joining the faculty of Bilkent University in 2006.

Dr. Göğüş’s research focuses on employee and organizational effectiveness, entrepreneurship, and, broadly, organization studies. Her articles have appeared in journals such as the Journal of Applied Psychology, the Journal of Business Ethics, Production and Operations Management, Decision Sciences, Applied Psychology: An International Review, Small Group Research and the Organizational Psychology Review. She has also published book chapters on work teams and female entrepreneurship.

Dr. Göğüş teaches courses on management, organizational behavior, organization theory, family business and human resource management at the undergraduate and graduate levels. She is a two-time recipient of the Dr. Orhan Karacadağ Scientific Achievement Award at Bilkent University and a recipient of the Mays Business School Dean’s Award for Outstanding Research by a Doctoral Student at Texas A&M University. She is a member of the Academy of Management.

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The Faculty of Law concentrates on graduate studies, where students have a distinctive opportunity to widen their understanding of law through advanced master’s and Ph.D. programs.

**FACULTY**


**PINAR ÇAĞLAYAN AKSOY**, Assistant Professor. Ph.D., Civil Law, Ankara University, 2015. Basic concepts of law.


**ECE GÖZTEPE ÇELEBİ**, Associate Professor. Ph.D., Law, Münster Westfälische Wilhelms University, 2001. Public law, constitutional law, constitutional judiciary; law, film and literature, methodology of law and research methods.


**OSMAN B. GÜRZUMAR**, Professor, Ph.D., Law, Bern University, 1991. Civil law, competition law.


**PINAR ALTİNOK ORMANCI**, Assistant Professor. Ph.D. Civil Law, Ankara University, 2011. Basic concepts of law, law of obligations (special part), business law, civil law II.

**ARİF BARIŞ ÖZBİLEN**, Assistant Professor Ph.D., Law, Galatasaray University, 2011. Property law, law of obligations (special part), business law.


**GÜLÜM BAYRAKTAROĞLU ÖZÇELİK**, Assistant Professor. Ph.D., Private International Law, Ankara University, 2007. European Union law, selected topics in English law, international family law, legal aspects of EU-Turkey relations, private international law.


Degree Requirements: Students admitted to the program will be required to complete a minimum of 21 credit hours of course work as well as three non-credit courses including a seminar and to write and defend a thesis. Students must complete the courses and the seminar in a maximum of four semesters and must complete the program with a minimum cumulative grade point average of 3.00/4.00, with no grades below C. The standard duration of study for the program is four semesters; the maximum duration is six semesters.

DOCTOR OF PHILOSOPHY IN PRIVATE LAW

The Ph.D. program in private law is designed for applicants with a master’s degree in law who wish to further specialize in private law. The program includes courses in classical and substantial areas of public law as well as in other areas involving national and international perspectives with regard to specialization. The language of instruction in some courses is English and in others, Turkish.

Admission: Applicants to the program must have a master’s degree in law. Proficiency in written and oral English must be documented; and an ALES score must be submitted.

Degree Requirements: Students admitted to the program will be required to complete a minimum of 21 credit hours of course work as well as four non-credit courses including a seminar and to write and defend a thesis. Students must complete the courses and the seminar in a maximum of four semesters and must complete the program with a minimum cumulative grade point average of 3.00/4.00, with no grades below B. The standard duration of study for the program is eight semesters; the maximum duration is twelve semesters.

DOCTOR OF PHILOSOPHY IN PUBLIC LAW

The Ph.D. program in public law is designed for applicants with a master’s degree in law who wish to further specialize in public law. The program includes courses in classical and substantial areas of public law as well as in other areas involving national and international perspectives with regard to specialization. The language of instruction in some courses is English and in others, Turkish.

Admission: Applicants to the program must have a master’s degree in law. Proficiency in written and oral English must be documented; and an ALES score must be submitted.

Degree Requirements: Students admitted to the program will be required to complete a minimum of 21 credit hours of course work as well as four non-credit courses including a seminar and to write and defend a thesis. Students must complete the courses and the seminar in a maximum of four semesters and must complete the program with a minimum cumulative grade point average of 3.00/4.00, with no grades below B. The standard duration of study for the program is eight semesters; the maximum duration is twelve semesters.

MASTER OF LAW AND ECONOMICS
(Non-Thesis)

The rapid development of the relationship between law and economics has brought multidisciplinary studies to the center of 21st-century legal education and practice. In today’s world, where the way in which law and economics interact has become ever clearer due to developments in the legal framework of market economies, legal scholars must also address the economic effects of laws and regulations and analyze the impact of globalization. The need for experts who are well versed in the economic issues arising in different legal regimes is growing; thus, it is
important to graduate students who are knowledgeable in economics as well as law. The recent and rapid convergence of the objectives of law and economics, which had traditionally been considered completely separate academic fields, has brought to the forefront various nexuses between the two. Investors, for example, require the assistance of lawyers who can take economic points of view into consideration when interpreting laws and regulations, and who are able to comment on economic behavior in the context of different legal systems, rather than simply providing standard legal consultancy. In this context, competition law and economic regulation law are especially important legal fields.

The main purpose of this program is to provide students with expertise in the legal framework of market economies as well as in competition law and economic regulation, who have the ability to apply their knowledge and awareness of the interaction between law and economics in modern practice.

**Admission:** Applicants to the program must have a bachelor's degree, and proficiency in written and oral English must be documented. Submission of an ALES score is not required.

**Degree Requirements:** Students admitted to the program will be required to complete a minimum of 30 credit hours of course work as well as one non-credit course, and to submit a term project. Students must complete the program with a minimum cumulative grade point average of 3.00/4.00, with no grades below C. The standard duration of study for the program is two semesters; the maximum duration is three semesters.

**COURSE DESCRIPTIONS**

**LAW 501 Economic Analysis of Law**
Economic analysis of law (or the doctrine of law and economics) is in today's world considered the most influential thought in foreign legal systems. This course aims to introduce this legal thought to students and to explain how it is to be applied in some basic fields of Turkish Law. Economic analysis of law can be defined as the application of economic theory (theories of behavior) to the legal rules and institutions. In this context, some basic terminology like rational choice theory, economic efficiency, social welfare and Coase theorem will be explained in the first part of the course. In the second part, the method of economic analysis will be applied in criminal law, laws of corporal property, contracts, consumer protection and mainly torts. The course language is English.

**LAW 503 Economics of Competition**
Competition law regulates the economic activities; but the operation of competition law has important differences from what is traditionally called legal regulation or regulation. The regulation has a nature peculiar to industry. Direct and regular determination of prices is related with product standards or barriers to entry to - exit from the market. Competition law, on the other hand, has application that covers the whole economy. It focuses on certain fundamental rules that aim good and efficient solutions for the society by enabling competitive interaction among firms. Interventions of authorities and pre-conditions, which may come into question in case of violation of these fundamental competition rules, are exceptional in nature. The main goal of this course is to introduce the theoretical approaches and basic techniques of economic analysis to graduate students in Turkey, where subjects of competition law and policy have developed parallel to the progressions in EU. The course language is English.

**LAW 504 Competition Law**
Basic concepts of competition law, anti-competitive agreements and concerted practices, abuse of the dominant position, mergers & acquisitions; decisions of the Turkish Competition Board, Turkish Council d’Etat, European Commission, European Court of Justice, US Supreme Court.

**LAW 505 Economic Regulation and Law**
This course has four main parts: In the first part, information about basic pricing theory will be given and the essential terminology that is going to be used in the other parts will be explained. In the second part, traditional approaches in regulation law, which focus on the relationship between market defects and regulation, will come into question. In the third part, it will be examined together with the results of positive regulation theory how the relationship between regulation and politic processes forms the law of regulation. In the fourth part, the methods of application of regulation in related markets will be analyzed. The course language is English.

**LAW 506 Energy Law and Policy**
In this course, legal aspects of Electricity, Natural Gas, Petroleum and LPG services and activities as the main research topics of the energy sector and the powers of Turkish Energy Market Regulatory Authority (EMRA) are going to be studied. In this context, for each sector license, tariff and monitoring mechanisms will be examined. The differences between current legal statuses arose within new regulations and the previous regulations and legal problems of the transition period going are to be assessed. Thereto relevant decisions of EMRA and current situation of competition complications within the energy sector will be analyzed from a legal perspective.

**LAW 507 Public Economic Law**
Characteristics and sources of 'public economic law': the law of the state intervention in the economy; fundamental principles of public economic law; public organization in the economy area; public law framework of the market economy and the transition period from interventionist state to regulatory state; and privatization of public economic enterprises, the legal mechanisms of public-private partnership in public services and the regulation of sectors.

**LAW 508 Telecommunications Law**
This course is composed of two parts. Topics that are going to be studied in the first part are: (i) Basic terms and concepts of telecommunications, history of telecommunications law and economic substances of telecommunications regulations, (ii) Comparative study of European Union Communications Law and Turkish telecommunications regulations especially about access and interconnection, universal service obligations and privacy, (iii) Intercourse of telecommunications law and regulations with other codes and especially the competition law, (iv) Attitudes in Turkish and European Union regulations and basics of Turkish telecommunications regulation in the context of telecommunications law's future. In the second part, legal framework of access and interconnection arrangements is going to be examined.

**LAW 509 Term Project**
Term project is a non-credit program activity stipulated by the Regulation for Graduate Education of the Council of Higher Education for the post-graduate programs with no thesis. The students are required to be successful at the term project in order to obtain the Diploma. Within this activity, the students should accomplish a research project, internship and a term project, submit a term project in order to obtain the Diploma. Within this activity, the students should accomplish a research project, internship and a term project, submit their projects in the form of a written report or a research document to the related academic instructor. Subject of the project: It should be related to one of the first-term courses. The project supervisor can be any of the academic instructors lecturing at the program.

**LAW 510 Banking Regulation Law**
Banks have a major importance in the economies of a country. Fulfilling the functions of the banks, especially accepting small amounts of money for deposit and directing this source towards credits for the development of the country, is very crucial for economic welfare. Profitable functioning of banking services depends on the regulation of this sector by an independent regulatory agency.
task lies within the responsibility of Banking Regulation and Supervision Agency (BRSA) in Turkey. BRSA is an independent regulatory agency, of recent date, given extensive supervision powers of banking services performs its duties within the terms of Banking Law. Legal grounds of the powers of BRSA, how these powers should be exerted and their legal consequences are going to be examined in this course.

**LAW 520 Capital Markets and Market Abuse**
The concept of market, price formation mechanisms, market abuses: insider trading and manipulation, sanctions for abuses: criminal and legal liabilities, market oriented approach, regulation approach in the European Union.

**LAW 530 Unfair Competition**
Regulation of unfair competition law in the European Union, Switzerland, Germany and Turkey; relation to the other right zone, especially to the competition law and law of the intellectual property; faithfully and belief; confusion, protection of know-how and against the abuse of fabrication secrets or business secrets; non-observance of work conditions; special cases of the unfair competition through advertising, sponsorship; sanction in the right of the unfair competition and consumer right.

**LAW 540 Real Estate Market Law**
Rights the subject of which are real estate, the use of real estate as a finance instrument, real estate financing, lien and housing finance institutions and funds as providers of such, real estate investment companies and asset lease companies together with mortgage backed and guaranteed securities, lease and real estate certificates will be discussed in this course.

**LAW 544 The Legal Framework of Social Dialogue**
Social dialogue, the “making” of EU Labor Law. The need for EU initiatives on social issues: European social dialogue: core concepts and mechanisms; structural and functional legal analysis. Rights to share information, to be consulted, to decide jointly, to produce joint opinions. Tripartite and bipartite platforms for dialogue.

**LAW 550 Fundamentals of Legal Thought**
Natural law: basic readings on some of the great thinkers defending the natural law view; concepts of natural rights, de officiis, the importance of natural law. Positive law, basic readings on some of the great thinkers who defend positive law view; concepts of legality, social contract, utilitarianism, relation between economy and law, justice. Legal method (language): legal relations, normativism, legal system, argumentum, antinomies, Tü Tü, force of law.

**LAW 551 Current Issues on Immovable Property Law**
Concept, types and components of real rights; land registry and the effect of registrations; acquisition of immovable property; expropriation, condominium; The Act on Subsidizing The Development of Forest Villagers and The Interpretation of Areas Taken Out of Forest Territories on Subsidizing The Development of Forest Villagers and immovable property; expropriation, condominium; The Act registry and the effect of registrations; acquisition of concept, types and components of real rights; land.

**LAW 552 Current Issues on Consumer Law**
Economic and social basis of consumer protection, constitutional bases and sources of consumer law, Consumer Protection Law, consumer protection in European Union, basic consumer rights, characteristics of consumer transactions in general, different types of consumer transactions, unfair terms, unfair commercial practices, arbitration committees for consumer problems and consumer courts.

**LAW 553 Current Issues on Law of Contracts**
Freedom of contract; establishment and validity of a contract; performance of obligations; restraints of performance; designation of compensation, inominate contracts; disputes related to law of contract.

**LAW 554 Current Issues on Law of Torts**
Concept and terminology; non-contractual liability in general; types of non-contractual liability; fault liability and liability without fault in tort law, elements of fault liability: damage, causation, unlawfulness, fault; types of liability without fault.

**LAW 555 Corporate Governance in Joint Stock Companies**
History, meaning, function and importance of corporate governance; policy; nature of rules; basic principles of corporate governance regarding protection of shareholders, equal treatment to shareholders, rights of stakeholders, responsibility of board members, independent directors, public disclosure and transparency; special corporate governance rules on capital markets law, banking law; the approach of Turkish Commercial Code and G20/OECD Corporate Governance Principles.

**LAW 556 Company Law and Competition Law**
Aspects of Mergers and Divisions
Mergers and divisions, Turkish Commercial Code provisions for mergers and divisions; shareholder rights in mergers and divisions, minority rights (especially in take over squeeze out transactions) and possible claims; concentration and deconcentration in terms of competition law including horizontal and vertical mergers; permission, commitments and divestiture in competition law; decisions of European Court of Justice, Competition Board and Council of State.

**LAW 557 Law Applicable to Contractual Obligations**
Law applicable to international contracts has become one of the most significant subjects of international trade. Choice of law by the parties is encountered frequently both in state courts and in international arbitration. Objective determination which indicates determination of applicable law where there is no choice of law by the parties is also an important issue before state courts and in international arbitration. In this framework, party autonomy in contract law and objective determination of applicable law are to be analyzed from the perspectives of private international law codes of certain states and international conventions.

**LAW 558 Procedural Irregularities in International Commercial Arbitration**
In this course, the notion of procedural violation and classification of procedural irregularities in international commercial arbitration are to be analyzed. In this regard, mainly, notification, objectivity and independency of arbitrators, procedural violations related to claim and defense, violation of the principle of party equality, drafting the arbitral award and the binding nature of the award » will be scrutinized. The gravity of a procedural violation and its effect on the enforcement of the arbitral award will be analyzed; control of the award by the state courts in terms of procedural irregularities will also be discussed.

**LAW 559 Liability of Organs and Members in Companies**
Company organs, organs of joint stock companies, organs of limited liability companies, general assembly, board of directors, directors, liability of board of directors, liability of directors, liability grounds, characteristics of liability, liability suits.

**LAW 560 Lis Pendens in International Civil Procedure**
Lis pendens or lis alibi pendens is today regarded as one of the important problems of international civil procedure. Where the same dispute is litigated simultaneously by the courts of more than one country, there is a risk of irreconcilable judgments and waste of judicial resources, time and effort. However there are no uniform rules or practices regarding international parallel proceedings adopted in international conventions or national legal systems. Therefore the course shall include discussions regarding the reasons of parallel proceedings, the main remedies provided for lis pendens in international
conventions and national laws as well as how Turkish law approaches to this problem.

**LAW 562 Legal and Administrative Aspects of Privatization**
The emergence of the concept of privatization and its theoretical basis. The formation of legal and administrative basis of privatization. The methods of privatization of property, management and finance. Privatization of public services, the model of Built-Operate-Transfer and other Public-Private Partnership models. Analysis of important decisions given by Constitutional Court and Council of State on privatization. Analysis of privatization methods in certain areas such as privatization of harbors and postal services.

**LAW 563 General Theory of Crime**
The course deals with the definition and study of the concept of crime, followed by an in depth analysis of the elements of crime. A comparative analysis of different views in Turkish law on the elements of crime and forms of crime will be made under the light of court decisions.

**LAW 564 Status of International Treaties in Domestic Legal Orders**
The aim of the course is to analyses the judicial regime of international treaties in terms of their formation under the Constitutions of 1924, 1961 and 1982, their hierarchical position in the Turkish legal system as ordinary laws and their exclusion from constitutional review. The scope of the course will also be put on the jurisprudential practice and the scholarly discussions regarding the constitutional amendments of 2001 and 2004 and the specialties of the ECHR pursuant to Article 90/5 of the 1982 Constitution.

**LAW 565 Protection Mechanism of the ECHR (Historical process and Implementation)**
This course aims at a historical and functional analysis of the fundamental rights protection system within the Council of Europe through the ECHR. Regarding this aim the main principles of the ECHR protection system, the content of the Convention and the Protocols will be focused. The Protocols to which Turkey is party will be of special importance. The normative regulations will be discussed in the light of the jurisprudence of the ECHR, since it has been developed to a crucial source for the jurisprudence of the Turkish Constitutional Court after the introduction of constitutional complaint mechanism in 2012. The leading case law analysis of the ECHR will be the heart of the course.

**LAW 566 Legal Security and Protection of Legitimate Expectations in EU Administrative Law**
Sources and general principles of EU administrative law; EU case-law and judgments of the European Court of Justice interpreting EU administrative law and legislation; EU treaties, regulations, directives and decisions including general principles of EU administrative law; recognition of the principle legal certainty and protection of legitimate expectations as one of the general principles of EU administrative law; legal certainty and protection of legitimate expectations in Turkish administrative law.

**LAW 567 Parliamentary Law**
Concept of “parliament”, its historical background, formation of the legislative body, unicameral and bicameral systems, electoral systems, size of parliaments, time period between elections, Turkish Parliament, its functions, legal status of the members (that is, representing the nation, parliamentary immunity, termination of membership).

**LAW 568 Contemporary Governmental Systems**
This course aims at an analysis of typologies of many governmental systems. The typological systems are amongst others the presidential, parliamentary system, semi-presidentialism, super-presidentialism, prime-minister presidentialism, presidential-parliamentary system which will be analyzed from the normative and factual perspectives.

**LAW 570 Principles of Social Security Law**
The objective of this course is to review from a global perspective the concept of social security, modern tendencies on the issue and the types of social insurances.

**LAW 590 Pre-Thesis Seminar**
A seminar for sophistication of the LL.M student’s required skills prior to writing the master’s thesis through a series of meetings between the LL.M. student and the advisor.

**LAW 601 Civil Law (Real Securities)**
General concept of real securities; particularly legal characteristics and types of real securities; namely pledge of movable property and mortgage on immovable property, creation and termination of pledge and mortgage, realization of pledge and mortgage, effective use of them in banking law.

**LAW 605 Constitutional Judiciary**
Functions of constitutional review and its relation to democracy, status of constitutional courts in political systems, the problem of constitutional court as “political actor”, the problem of judicial activism and judicial self-restraint, rigid constitutions, protection of legal and political system by the means of constitutional review.

**LAW 610 ICSID Arbitration**
Foreign direct investments, ICSID arbitration, additional facility rules, ICSID cases against Turkey, settlement of state-investor disputes, jurisdiction of ICSID, enforcement of ICSID arbitral awards, World Bank.

**LAW 612 Bound Enterprises Law (Company Groups Law)**
Provisions of Turkish Commercial Code for group of companies, dominant and affiliated companies, legal independence- economic dependence, main concepts such as dominance, types and tools of dominance, contracts between group companies, special protection for shareholders within the provisions of Turkish Commercial Code for group of companies, supervision and disclosure requirements, liabilities specially designed for group of companies.

**LAW 615 Doctrine of Innominate Contracts**
Freedom of contract and its limits, innominate contracts and mixed contracts; particularly the rules governing innominate contracts, filling the blanks in mixed and innominate contracts, multi-meaning provisions in contracts and especially in innominate contracts, type and the typological practice.

**LAW 618 Social Law**
This Ph.D seminar gives an overview of the background and sources of collective labor law and social policy, a brief history of collective labor law, emergence of traditional labor institutions trade unions, collective agreements, labor disputes, strikes, together with increase and decrease in density of union membership, economics and human rights perspectives on labor laws and emergence of new labor instruments, among which are social dialogue, participation, flexibility, new forms of employment contracts, job security.

**LAW 624 International Procedure**
International Jurisdiction of state courts, ADR, Arbitration, Recognition and Enforcement of arbitral awards, Subject matter jurisdiction of domestic courts in international disputes, exorbitant jurisdiction of the courts, annulment of arbitral awards.

**LAW 632 Legal Acts (Transactions) Theory**
Formation, form and validity of legal acts, types of legal acts; particularly the contracts, rules governing contracts, formation and validity of contracts, legality and interpretation of the contracts.

**LAW 634 Methodology of Law**
The course for young academics pursues three aims: To learn the research sources in general and specifically for
law; the categorization of the acquired material and its main principles; and lastly, to practice the methodology of law in terms of writing short research papers which will be discussed in class.

**LAW 680 Current Issues on Private Law**
Materials and tools for legal studies, methods and principles on shaping ideas and writing papers, function of comparative law and methodological considerations, legal hermeneutic.

**LAW 682 Current Issues on Public Law**
Current issues and new developments in public law. The specific content of the course is determined by the instructors.

**LAW 690 Pre-Thesis Seminar**
A seminar for sophistication of the Ph.D. student's required skills prior to writing the Ph.D. dissertation through a series of meetings between the Ph.D. student and the advisor.

**SAMPLE OF RECENT PUBLICATIONS**

- T. Akillioglu, “Telekomunikasyon ve Insan Haklari”, Prof Dr. Yildirim Uluer’e Armagan, Yakın Doğu Universitesi Yildirim Uluer'e Armagan (2016)
- T. Akillioglu, “Telekomunikasyon ve İnsan Haklari”, Prof Dr. Yildirim Uluer’e Armagan, Yakın Doğu Universitesi Yildirim Uluer'e Armagan, (2016)


B. Ouzelik, “Türk Borçlar Kanunu’na Göre Konaklama Yeri İşletmenin Konaklayışın Eyaçının Yok Olması, Zarar Görümsesi veya Çalışmasından Sonuçlulüğünü”, Marmara Üniversitesi Hukuk Fakültesi Hukuk Arastır Dergisi (Forthcoming)


S.B. Ozelik, Tüp Siciline Güvenin Korunması, Yetkin Kitabevi Ankara, (2016)


S. Selçuk, Dreyfus Davası, Dunyaca Unutulmayan Yargılama Yanılgısı, İmge Yayınevi, (2014)

S. Selçuk, Türkiye Cumhuriyeti Basbakanı Nas Mektup, İmge Yayınevi, (2014)


• T. Tan, “Anayasa Mahkemesi’nin Yerel Idarelere Bakısı”, Prof. Dr. Tayfur Özsen Anisina 70. Yas Armaganı, pp. 378-382, Memleket Yayınları (2014)


• H. Toroslu, Ceza Hukukunda İsnat Yeterliği, Savas Yayınları, (2015)


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Faculty Profile: Dr. Turgut Tan, Professor, Faculty of Law

Turgut Tan, dean of the Faculty of Law, received a Ph.D. from the University of Ankara. He also obtained a Diplome d’Etudes Superieur Européennes from Centre Européen Universitaire de Nancy (France). He was a professor of administrative law in Ankara University’s Faculty of Political Sciences prior to joining Bilkent University in 2002 as the founding dean of the Faculty of Law.

Prof. Tan has held visiting positions in Paris, Dijon, Pau (France), Sapienza (Rome, Italy) and Cambridge (U.K.) universities. His areas of research include various aspects of administrative law and public economic law. He has served as a director or participant in research projects such as the Reorganization of Financial and Economic Institutions (a project supported by State Planning Organization) and the Legal Aspects of B.O.T. Contracts (a project supported by the Turkish Industrialists’ and Businessmen’s Association).

Among his publications are the books Legal Aspects of Economic Planning (1976), Legal Framework of Turkish Economic Policy (with Ö. Uluatam, 1982), Public Economic Law (2nd ed. 2015), Administrative Law (2 volumes, with Ş. Gözübüyük, 11th ed. 2016), and Administrative Law (5th ed. 2016). His articles have appeared in various Turkish and international journals and reviews of constitutional and administrative law.

Prof. Tan has also served as a member of the Constituent Assembly (1981-1983), dean of Hacettepe University’s Faculty of Administrative and Economic Sciences (1986-1991), president of the Permanent Experts Committee for Legislative Harmonization between the European Union and Turkey (1993-1995), counselor to the Minister of State in charge of public servants and human rights (1997-1999), and counselor to the Presidency of the Competition Authority (1999-2002).

Faculty Profile: Dr. Aslı Gürbüz Usluel, Assistant Professor, Faculty of Law

Aslı Gürbüz Usluel graduated from the Ankara University Faculty of Law in 2000 and obtained her LL.M. degree in international business and trade law at Erasmus University (Rotterdam) in 2002. Before being appointed a research assistant at Bilkent University, she practiced law and also taught business law courses at other universities (2002-2003). She subsequently received a Ph.D. in commercial law from the Ankara University Faculty of Law; her doctoral thesis, Türk Özel Hukukunda ve Özellikle Anonim Şirketlerde Ticari Sırrın Korunması, was published in 2009.

Dr. Gürbüz Usluel has pursued her research at Albert-Ludwigs-Universität in Freiburg, Germany (2006), and the Swiss Institute of Comparative Law in Lausanne (2008, 2015). In September 2009 she was appointed assistant professor of commercial law in the Bilkent University Faculty of Law, where she subsequently served as assistant dean (May 2012-January 2015).

Her research and teaching interests focus on commercial enterprises, mergers and acquisitions, groups of companies, corporations, and international business law. Dr. Usluel’s latest book, Anonim Şirketlerde Pay Sahibinin Kâr Payı Alma Hakkı, was published in 2016. She has also published articles in journals such as the European Journal of Law and Economics, Batider and İstanbul Universitesi Hukuk Fakültesi Mecmuası and presented papers on corporate law at national and international conferences.
Bilkent University’s graduate programs in economics not only prepare students to conduct independent research, but also furnish them with specialized knowledge to meet the needs of today’s business world. For this purpose, the programs are designed to ensure that students acquire a solid background in economic theory and a thorough knowledge of the techniques used in empirical research. The Department of Economics offers M.A. and Ph.D. degrees geared toward academic careers, as well as a dual master’s program with Tilburg University in the Netherlands, which provides application-oriented specialization in fields of high demand. The core requirements common to all programs leave little room for choosing the courses to be taken during the first year, but students are offered considerable flexibility in their choice of fields of specialization later on.

The underlying educational philosophy of the programs is that independent research activities improve students’ problem solving skills and are useful learning tools that are at least as important as the course work students are expected to complete. In keeping with this philosophy, the department places considerable emphasis on high-quality student research and offers master’s degrees only through the thesis option. Both the master’s thesis and the doctoral dissertation must be the result of original research on an empirical or theoretical issue of the candidate’s choice and must satisfy the high academic standards of the department.

**FACULTY**

**PELİN AKYOL**, Assistant Professor, Ph. D., Economics, Pennsylvania State University, 2014. *Applied microeconomics, industrial organization, educational economics.*


**NUH AYGÜN DALKIRAN**, Assistant Professor, Ph.D., Managerial Economics and Strategy, Kellogg School of Management, Northwestern University, 2012. *Game theory, economics of information, repeated games and reputations, political economy, decision theory.*

**REFET GÜRKAYNAK**, Professor and Department Chair. Ph.D., Economics, Princeton University, 2004. *Monetary economics, financial economics, international economics.*

**KEVIN HASKER**, Assistant Professor, Ph.D., Economics, Northwestern University, 1998. *Microeconomics, game theory, auction markets.*


**TARIK KARA**, Assistant Professor, Ph.D., Economics, Rochester University, 1996. *Game theory.*

**EMİN KARAGÖZÜLU**, Associate Professor. Ph.D., Economics, Maastricht University, 2010. *Game theory, experimental and behavioral economics, microeconomic theory, organizational economics, public economics and (positive) political economy.*

**BURÇİN KISACIKOĞLU**, Assistant Professor Ph.D., Johns Hopkins University, 2016. *Macroeconomics, financial economics, monetary economics.*

**SEMİH KORAY**, Visiting Professor, Ph.D., Mathematics, Boğaziçi University, 1980. *Mathematical economics.*


**SYED F. MAHMUD**, Visiting Associate Professor, Ph.D., Economics, McMaster University, 1986. *Econometrics, macroeconomics.*


**AYŞE ÖZGÜR PEHLİVAN**, Assistant Professor, Ph.D., Economics, Pennsylvania State University, 2011. *International trade, empirical industrial organization and applied microeconometrics.*


**FATMA TAŞKIN**, Associate Professor, Ph.D., Economics, Boston College, 1988. *International economics, macroeconomics.*
Degree Requirements: The standard duration of study for an M.A. in economics is two academic years (including summers). The core curriculum for the M.A. degree requires completion of 10 courses and 36 credits, and the preparation and successful defense of a master's thesis based on original research.

DOCTOR OF PHILOSOPHY IN ECONOMICS

The Ph.D. program requires the attainment of theoretical and technical competence conforming to international standards in the field of economics.

Admission: Prospective students may apply either immediately after obtaining an undergraduate degree, or following the completion of an M.A. degree in economics or an M.A. or M.S. in a related field. Applicants should take the ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı Academic Personnel and Postgraduate Education Entrance Examination) and must satisfy the announced minimum requirements. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of a foreign country may take the GRE (Graduate Record Examination) instead of the ALES. All non-native speakers of English are required to submit proof of proficiency in English.

Degree Requirements: At least 24 credit hours of course work must be completed beyond that for the M.A. degree, and 60 hours beyond the bachelor's degree. The Ph.D. student is expected to pass qualifying examinations, and to prepare and successfully defend a dissertation. The dissertation must be an original piece of work written by the candidate to address an empirical or theoretical issue and must satisfy the high academic standards of the department.

MASTER OF ARTS IN ENERGY ECONOMICS, POLICY AND SECURITY (Non-Thesis)

The main objective of the program is to introduce and build the necessary academic infrastructure regarding issues of energy policy and security that strategically affect Turkey’s economy and foreign policy. The program emphasizes both basic conceptual and applied policy-related aspects of global energy markets and identifies the key agents, institutions, and powers involved in processes of sustainable and affordable energy and resource management, as well as examining Turkey’s strategic policy choices for satisfaction of its growing energy needs in a potentially conflict-ridden global economy.

The program addresses the following issues:

- Documentation of Turkey’s energy needs and priorities in the short and the long run;
- Assessment and investigation of regional/global developments in energy markets with a special focus on the strategic powers and key players;
- Analytical assessment of Turkey’s strategic policy choices and the key constraints on and opportunities for energy security.

Admission: An undergraduate degree is a prerequisite for admission.

Degree Requirements: Students accepted into the program must complete at least 90 credit hours of course work. There is one scientific preparation course, Energy Geopolitics and Policy, and a total of six required EEPS courses: Economic Analysis of Energy Issues, Energy Policy Analysis, Empirical Methods in Energy Economics, Policy Skills and Strategic Analysis, Energy Security and Foreign Policy, and Guided Academic Writing. In addition, four elective courses may be selected from among the graduate courses offered each semester (at least two must be from the list of restricted elective courses).

COURSE DESCRIPTIONS

ECON 500 Mathematical Review Course
Mathematics Review Course, Econ 500 (Math camp) is designed to maintain and develop familiarity with the mathematical tools used in the Master's and Ph.D. Program in the department of Economics. This course is designed to help students master an important set of mathematical skills necessary to study economics. It will cover basic concepts from calculus, linear algebra, optimization, and mathematical analysis, which will be used in the first year courses.

ECON 501 Economics I
ECON 502 Economics II
A sequence designed for M.B.A. students of the Faculty of Business Administration. The fundamentals of micro- and macroeconomics are covered in these courses. The theory of demand, rational choice, and market structures are among the micro topics. Macro subjects include national income concepts, theory of income determination, money and banking, and international trade.

ECON 503 Microeconomic Theory I

ECON 504 Microeconomic Theory II
Theory of general competitive equilibrium. Topics include existence of equilibrium, computational techniques, core of the economy, stability, uniqueness of equilibrium, and empirical general equilibrium models.
ECON 505 Macroeconomic Theory
A wide-ranging survey of modern macroeconomic theory with an emphasis on the necessary mathematical tools and the dynamic methods. Focuses on competitive equilibrium, optimality, dynamics of equilibria, economic fluctuations, long-run growth, technological progress, life-cycle aspects and economic policies.

ECON 506 Macroeconomic Theory II

ECON 509 Probability and Statistics I

ECON 510 Probability and Statistics II
Ordinary Least Squares: basic assumption, estimation and tests of hypotheses, the coefficient of determination, prediction, functional forms, the problem of choosing between them and specification tests, multicollinearity. Dummy Variables, testing structural change, estimating the prediction error variance and pooling cross-sectional and time-series data. Lagged dependent variables, binary dependent variables. Autocorrelation and heteroscedasticity. Simultaneous equations; identification and single-equation estimation techniques.

ECON 511 Econometrics I
Theory and applications of time series models. Topics include ARMA and VARMA models, Trend-Cycle decomposition, Unit roots, Cointegration, Structural change, GARCH, Regime switching and threshold models, State space form and Kalman filters, and specialized topics such as Fractional Integration and I(2) models.

ECON 512 Econometrics II
Theory and application of existing micro-econometric techniques, econometrics of panel data, and Monte Carlo simulation. Topics include Discrete regression models, Censored and Truncated regression, Models with self-selectivity, Disequilibrium models, Count Data, Duration models, Static panel data analysis, Dynamic panel data analysis, Non-stationary panel methods: Panel unit roots and cointegration, Panel VAR, Monte Carlo and bootstrap.

ECON 513 Game Theory I
Noncooperative game theory. Various equilibrium concepts, games with incomplete information, equilibrium refinements, applications of game theory.

ECON 514 Game Theory II
Cooperative game theory. Axiomatic bargaining, cooperative games, public decision mechanisms, social choice theory.

ECON 515 Mathematics for Economists I

ECON 516 Mathematics for Economists II

ECON 517 Mathematical Economics I
Mathematical theory of general economic equilibrium.

ECON 518 Mathematical Economics II
Dynamic aspects of equilibrium models. Game theory and the theory of industrial organization.

ECON 521 International Economics I
Theory of international trade and applications in commercial policy.

ECON 522 International Economics II
Adjustment in international economic relations with attention to foreign exchange markets, balance of payments, and the international monetary system.

ECON 523 Firms in International Trade
The aim of this course is to provide a comprehensive overview of the theory of international trade at an advanced level. In doing so, it will focus on firms and examine the role they play in international trade. The course will cover various topics that include firm heterogeneity, quality differentiation, multi-product firms, oligopoly and trade, foreign direct investment, trade in intermediates, and globalization-induced organization of firms. It will present various models, empirical findings that motivate them, and it will discuss the predictions of the models for trade policy.

ECON 531 Economic History I
ECON 532 Economic History II
A survey of world economic history designed to introduce students to the subject matter and methodology of research in the area.

ECON 535 Methodology and History of Economics I
ECON 536 Methodology and History of Economics II
A brief discussion of the history of science to be followed by methodological issues in economics. A chronological survey of various past contributions to economic theory, starting with a broad overview of the pre-Classical period. Special emphasis is placed on the Classical school with a detailed survey of individual contributions from Adam Smith to John S. Mill. The coverage extends to a critical review of Marxian economics, the rise of Neo-Classical economics and the Keynesian challenge to Neo-Classical economics.

ECON 551 Contemporary Topics in Economics I
ECON 552 Contemporary Topics in Economics II
A general discussion of various non-technical topics of interest to faculty members that is likely to help broaden the horizons of graduate students beyond their chosen fields of study.

ECON 553 Topics in Microeconomic Theory I
ECON 554 Topics in Microeconomic Theory II
The subject matter of this course will vary from year to year according to the interests of the instructor. Prerequisite: ECON 504 and the consent of the instructor.

ECON 555 Topics in Macroeconomic Theory I
ECON 556 Topics in Macroeconomic Theory II
The subject matter of this course will vary from year to year according to the interests of the instructor.

ECON 557 Current Issues in Fiscal Economics I
ECON 558 Current Issues in Fiscal Economics II
Macroeconomics of populism, time consistency, commitment and reputation, fiscal policy as a strategic tool in political competition, the impact of budgetary institutions and procedures, the role of political institutions, incomplete or delayed stabilization.

ECON 561 Fiscal Economics I
ECON 572 Fiscal Economics II
Quantitative analysis of economic effects of fiscal instruments and fiscal changes such as negative income tax, corporate income tax, integration, general fiscal incidence, expenditure taxation.

ECON 591 Pro-Thesis Seminar I
ECON 592 Pro-Thesis Seminar II
This is a course where students will attend a series of lectures presented by faculty members and/or invited academics and submit written reports on the papers presented.

ECON 595 Research Paper I
ECON 596 Research Paper II

ECON 599 Master's Thesis.

ECON 691 Ph.D. Pro-Thesis Seminar I
ECON 692 Ph.D. Pro-Thesis Seminar II
This is a course where students will attend a series of lectures presented by faculty members and/or invited academics and submit written reports on the papers presented. The students working on their dissertation are expected to present the outcome of their research and submit a research paper of publishable quality.

ECON 695 Research Methods in Economics I
ECON 696 Research Methods in Economics II
This is a course where students will complete a research project with the full-time guidance and tutoring of a group of faculty members. The students will learn alternative research methods used in economics and apply them to a research question, with the goal of completing an academic paper at the end of the course sequence.

ECON 699 Ph.D. Dissertation
Independent work leading to the selection and elaboration of a dissertation topic. Participation in departmental seminars and presentation of results from the student's own research.

EEPS 501 Economic Analysis of Energy Issues
This course will equip you with the necessary tools to do economic analysis relevant for energy related issues. The aim is to make you comfortable with the basic analytical tools of economics and also to illustrate their use in better understanding the economy we are living in.

EEPS 502 Empirical Methods in Energy Economics
The course provides an introduction to quantitative methods used to analyze problems in energy and environmental economics. This course will focus on econometric modeling and methods and their application to analyze energy and environmental issues. By doing so, the course will reinforce concepts, rationales, and instruments for policy intervention in energy markets. Students will develop expertise in working with data and in applying numerical simulation models as well as econometric techniques using computer software.

EEPS 503 Energy Policy Analysis
This course aims to introduce key themes related to energy policy analysis. Students will be provided with the essential conceptual and analytical tools required to the study of identification and satisfaction of energy needs and priorities by reference to a multiplicity of perspectives, including national, regional and global dynamics, challenges and processes and the interplay among them. In particular: how are energy policies formulated, designed and implemented at a regional and global scale, issues of energy governance and societal risks. By the end of the course, students are expected: i. to acquire a basic understanding of political and social factors that contribute to energy policy-making; ii. to advance ability for using theories and concepts in energy policy analysis; iii. to develop critical thinking and comparative skills in energy politics and energy policy analysis.

EEPS 504 Policy Skills and Strategic Analysis
This course will equip students with the necessary tools to understand the multifaceted nature of the energy sectors and its applications in contemporary society. The purpose of the course is twofold: First, it will enable students to develop the analytical tools necessary for following recent trends in the global energy markets. Second, it will help them develop the necessary knowledge and skills to conduct strategic analysis in energy related issues. Each week we will have an expert who will give a guest lecture on different aspects of the course material and discuss how policymakers could best react to contemporary challenges in the field of energy.

EEPS 505 Energy Geopolitics and Policy (Scientific Preparation Course)
This course is focused on contemporary trends, issues and actors involved in the making of policies towards affordable and sustainable management of energy needs and resources.

EEPS 506 Energy Security and Foreign Policy
This course examines the challenge for energy security in relation to foreign policy analysis. The course has three parts. The first part outlines the continuities and changes in the global energy market to underline the emerging challenges in securing energy supplies, access to resources and the environment. The second part presents different theoretical approaches to facilitate a conceptual framework in analyzing how energy security relates to foreign policy. The third part focuses on selected issues and cases to analyze and discuss energy security and foreign policy in the light of the different conceptual frameworks presented in the second part of the course.

EEPS 508 Guided Academic Writing
This course aims to help students in EEPS to develop effective ways to communicate within their professional and academic fields. Through hands-on writing exercises and workshops, and through close reading of texts reflecting conventions and discourse patterns of different fields, students will improve their ability to attend to such important writing skills as clarity, concision, style, structure, and genre awareness.

SAMPLE OF RECENT PUBLICATIONS


- B. Dogan, A. Sahin, H. Berument, “Rethinking interest rate volatility as a macroprudential policy tool”, Middle East Development Journal, 8, 109-126 (2016)


• M. Ozer, Ç. Sağlam, “Strategic interaction and catching up”, Bulletin of Economic Research (Forthcoming)
• C. Le van, Ç. Sağlam, A. Turan, “Optimal growth strategy under dynamic threshold”, J of Public Economic Theory (Forthcoming)
• H. Aytug, M.M. Kutuk, A. Oduncu, S. Togan, “Twenty Years of the EU-Turkey Customs Union: A Synthetic Control Method Analysis”, J of Common Market Studies (Forthcoming)
• S. Togan, “Technical Barriers to Trade: The Case of Turkey and the European Union”, J of Economic Integration, 30, 121-147 (2015)
• S. Togan, The Liberalization of Transportation Services in the EU and Turkey, Oxford: Oxford University Press, (2016)
• S. Togan, Foreign Trade Regime and Trade Liberalization in Turkey During the 1980s, Avebury, (1994)
• M. Trokic, “Wavelet energy ratio unit root tests”, Econometric Reviews (Forthcoming)
• M. Ozer, E. Yeldan, “Dynamic Linkages of Current Account Deficits and Unemployment: Evidence from Turkey”, Wulfenia (Forthcoming)
• A.E. Yeldan, B. Unuvar, “An Assessment of the Turkish Economy in the AKP Era”, Research and Policy on Turkey, 1, 11-28 (2016)

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Faculty Profile: Dr. Refet Gürkaynak, Professor, Department of Economics

Refet Gürkaynak received a Ph.D. from Princeton University in 2004. After working at the Federal Reserve Board, he joined Bilkent University, where he currently teaches macroeconomics, in 2005. He was also a consultant to the Central Bank of the Republic of Turkey and research fellows of the Centre for Economic Policy Research, Center for Financial studies and CESifo. He is chair of the Department of Economics. His articles have appeared in publications including the Journal of the European Economic Association, the Journal of Monetary Economics, the American Economic Review, and the Review of Economics and Statistics. He was awarded the Central Bank of Turkey’s Young Researcher Award, the European Central Bank’s Lamfalussy Fellowship, and the Turkish Academy of Sciences’ Young Scientist Award, Young Scientist Award, as well as an ERC Consolidator Grant. Dr. Gürkaynak’s current research is on monetary economics, finance, and, broadly, macroeconomics. He is an associate editor of the Central Bank Review, and the Journal of Monetary Economics, and managing editor of Economic Policy.
The Department of History focuses on graduate studies, offering M.A. and Ph.D. programs in the areas of Ottoman, American, and European history. Emphasis is placed on preparing students to undertake independent research in these fields. The graduate program includes a preparatory year, allowing students to acquire the skills and language proficiency that will enable them to carry out original research using primary source materials.

**FACULTY**


**ÖZER ERGENÇ**, Visiting Professor. Ph.D., History, Ankara University, 1974. Ottoman social and economic history, Ottoman urban history.

**MEHMET KALPAKLI**, Associate Professor and Acting Department Chair. Ph.D., Turkish Literature, University of Washington/Istanbul University, 1992. Ottoman literature and cultural history, near eastern languages and literature, modern Turkish literature, theory of literature, digital humanities.


**PAUL LATIMER**, Assistant Professor. Ph.D., History, Sheffield University, 1982. Medieval European history.


**EVGENI RADUSHEV**, Visiting Assistant Professor. Ph.D., History, Bulgarian Academy of Sciences, 1982. Ottoman diplomats and paleography, ottoman socio-economic, political and ethnocultural history.


**KENNETH WEISBRODE**, Assistant Professor. Ph.D., History, Harvard University, 20th century American diplomatic history.


**MASTER OF ARTS IN HISTORY**

The program is designed with concentrations in the areas of Ottoman History, European History, and the History of the United States.

**Admission:** An undergraduate degree in history is not a prerequisite for entering the M.A. program. Graduates of departments in the social sciences, humanities, sciences, management, and engineering may apply. All students entering the graduate program in history must take one year of preparatory courses before beginning the master’s level courses. Students should have a good command of written and oral English, as indicated by a minimum TOEFL score or an equivalent announced by the department.

Applicants should take the ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı/Academic Personnel and Postgraduate Education Entrance Examination) and must satisfy the announced minimum requirements. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of a foreign country may take the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of proficiency in English.

**Degree Requirements:** In addition to at least 18 credits taken during the preparatory year, the completion of 21 graduate-level units of credit is required. Students in the Ottoman History program must also demonstrate competence in Ottoman Turkish, and students in the European History program, competence in Latin. All students must demonstrate competence in one modern language other than English and Turkish. A master’s thesis must be submitted and accepted.

**DOCTOR OF PHILOSOPHY IN HISTORY**

**Admission:** To enter the Ph.D. program, candidates are required to have completed an M.A. degree in history or a related field. They must also pass the entrance exam for the area in which they wish to specialize. All applicants must submit ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı/Academic Personnel and Postgraduate Education Entrance Exam) or GRE (Graduate Record Examination) scores and proof of satisfactory knowledge of English.

**Degree Requirements:** Students must take a minimum of 21 credit units of graduate-level course work beyond the
master's level. These courses are to be determined by the advisor and the departmental chair on an individual basis for each doctoral candidate. If appropriate, graduate level courses from other departments may be taken. Partial or full credit may be granted by the Graduate School of Economics and Social Sciences to those who have taken graduate courses elsewhere. The candidate may also take language courses as recommended by his/her advisor and is expected to have participated in seminars offered on source materials.

After completing the minimum 21 credits of course work, candidates take written and oral comprehensive exams. The first part of these examinations evaluates a candidate's expertise in the field/period. The second part is tailored to the individual student's dissertation research proposal. The candidate must prepare a doctoral dissertation based upon original research and must successfully defend it during a final examination before a faculty committee by the end of the second year of the doctoral program. The dissertation must represent a substantial contribution to historical knowledge in the particular field of study in question.

**COURSE DESCRIPTIONS**

**HIST 501 Ottoman Paleography I**  
Advanced reading exercises with Ottoman documents.

**HIST 502 Ottoman Paleography II**  
Advanced reading exercises with Ottoman documents.

**HIST 503 Ottoman Rule in Southeast Europe I: 1354-1600**  
Local Balkan monarchies (Bosnians, Bulgarians, Serbs) and the growing feudalization of the region, Ottoman expansion and the foundation of the First Ottoman Empire. Interregnum and the Second Ottoman Empire. Social and economic developments. Administration and land regime. Urban and rural structure. Vassal and tributary states. The unique case of Dubrovnik.

**HIST 504 Ottoman Rule in Southeast Europe II: 1600-1878**  
Islamic culture and heterodox Islamic movements in Southeast Europe. Decline of the Ottoman Empire. Military and fiscal transformation and its impact on Ottoman Balkans. The Siege of Vienna in 1683 and the political and social effects of the Ottoman defeats. The rise of non-Muslim middle class and education. The struggle for independence of Balkan people and the "Eastern Question".

**HIST 505 Methodology in History I**  
Basic methods in historical research. The history of historiography. Main traditions and currents of historical thought.

**HIST 506 Methodology in History II**  
Basic methods in historical research. The history of historiography. Main traditions and currents of historical thought.

**HIST 507 Latin Palaeography for Medieval and Early Modern European History**  
The aim of this course is to introduce the main developments in European handwriting for the period 500 to 1600, and to enable history students to use Latin and vernacular manuscript sources as part of their research. In addition to different scripts, the course will also cover other paleographical topics, such as abbreviations, as well as codicology and manuscript illumination.

**HIST 508 Ottoman Social and Economic History I**  
Ottoman Beylik as a frontier state. Hegemony in Anatolia and the Balkans. The Battle of Ankara and struggle for Revival. The conquest of Constantinople. The definitive foundation of the classical Ottoman Empire. The Ottoman Empire as a world power. Internal disorders. Social, economic and religious institutions.

**HIST 509 Ottoman Social and Economic History II**  
The periods of transition and modernization of the Ottoman state and society. The denomination of the Ottoman classical socioeconomic structure. The weakening of central authority. The ayans. Early attempts of modernization.

Influence of the “Enlightenment” ideas on emergence of nationalist currents among non-Muslim communities. Tanzimat.

**HIST 510 Aspects of Ottoman Social History**  
Main foundations of the Ottoman Empire. Demographic movements, fiscal structure, administrative institutions, land and peasants, settlement patterns, internal and external trade.

**HIST 511 Ottoman Millet System**  
Legal and social status of non-Muslim communities in the Empire, their cultural life and ecclesiastic organizations. The evaluation of the Christian and Jewish communities after the decree of “Tanzimat” in 1839 and after the Congress and Convention of Paris in 1856 will be discussed in this course.

**HIST 512 Ottoman Millet System**  
The Ottoman land regime. Social and legal changes throughout periods. Reading and analysis of sources berats, mühimmes, sicils, tahrirs, temettüats and vakfiyyes.

**HIST 513 US in the Vietnam Era**  
This course is designed to give students in the Master's program in American history an in-depth look at the history of Vietnam War. The course will focus on the period roughly 1945-1975. In addition to the war itself, other topics for discussion will include the Cold War, the Civil Rights movement, the counter culture and the legacy of the war in the 1990s.

**HIST 514 US in the Gilded Age and Progressive Era**  

**HIST 515 Major Issues in Medieval and Early Modern Economies**  
Study of the main transformations in the economies of Europe and the Near East from late Roman times to the mid-17th century. Examination of the disappearance of a monetary economy, emergence of manorialism, and trade life in the Mediterranean basin. Development of markets and the domination of the Atlantic economy. Price inflation. Reasons for and consequences of these developments.
HIST 563 Islamic Culture in the Ottoman Balkans 1400-1600 - I
Introduction of Islamic culture to the Balkan peninsula by the Ottomans. Local Balkan Islamic culture. Relations between high Islam in Istanbul and the local Balkanic Islam. Emergence of heterodoxy and orthodoxy.

HIST 564 Islamic Culture in the Ottoman Balkans 1600-1900 - II

HIST 573 New Era/New Deal (1920-1945)
This course is designed to give students in the Master’s program in US history an in-depth look at the history of and historical literature about the period 1920-1945. Major topics will include the Jazz Age, the Roaring 20’s, the Great Depression, Franklin Roosevelt’s New Deal and World War II.

HIST 577 U.S. Military and Diplomatic History
An intensive examination of American military and diplomatic history from the colonial period to the present with a focus on historiography. Topics may include colonial wars in North America, the wars of the United States, war and American society, treaties with European nations and with Native Americans, imperialism and anti-imperialism, realignment, and the cold war.

HIST 581 Latin for Medieval and Early Modern History III
Reading and interpretation of Medieval historical documents in Latin. Selection of documents relevant to the socio-economic history of Europe like registers, bills, treaties, monastic writings.

HIST 589 History of Arab Nationalism in the Middle East
This course explores the birth, triumph and fall of Arab nationalism in the Middle East. The course focuses on historical events, political leaders and movements all of which defined and shaped the nature of the movement. Concepts such as Arabism, Arab unity and Arab nationalism are among the terms that we will investigate along with their contextualization in different regions of the Middle East by various actors. Factors which contributed to the development and/or decline of the Arab nationalist movement will be examined are: colonialism, the dissolution of the Ottoman Empire, World War I and World War II, the emergence of the State of Israel, the Egyptian Revolution and the rise of Nasser, Islamic resurgence and the recent incidents in the region. The ideological links between Arab nationalism and modern radical movements will also be examined.

HIST 708 European Migration to the Ottoman Empire and Early Republican Turkey
The course aims at giving an overview of European Migration to the Ottoman Empire up to Early Republican Times (1930). The Jewish immigrants from 15th-century Spain, the Levantines, renegades, and converts to Islam, reformers in different areas in the 18th and 19th centuries up to the German intelligentsia migrating to the Republic of Turkey during World War II will be dealt with. Biographies of selected persons from different backgrounds will be introduced. Within the framework of the course, migration theories will be the subject of discussion; selected primary sources will be studied and analyzed.

HIST 710 Topics in Modern European History 1870-1970
This course will take the most significant episodes of modern European (and in part world) history with a view to encouraging students’ interpretive abilities. The topics will be Imperialism around 1890, the “Great Depression” of the later nineteenth century and what it meant, the spread of parliamentary constitutionalism, the rise of Socialism and of a new Political Catholicism. Minority nationalism will be examined, and the rise of Fascism and Communism. The course ends with the attempt to create a new Europe after 1947, and the involvement of the USA.

HIST 713 History of European Integration
This Seminar explores the history of the European movement from a political, social, economic and cultural perspective from the interwar period through the end of the Cold War. Topics include alternate visions of Europe, the histories of European institutions and legal regimes, the trajectory of ‘widening’ and deepening, the relations between European integration and the Cold War, biographies of the principal figures in the European movement (Briand, Monnet, Schuman, Spinelli, Delors, et al), and legacies of European federalism in present-day relations of the EU with wider world.

HIST 714 Central Eastern Europe (1815-1945)
This course will cover assorted topics in the modern history of Central Europe, extending from the later nineteenth century to 1970, with the possibility, for IR students, of studying the late-Communist period. The area involved stretches from Poland to the Balkans, but the students will be able to concentrate on countries that are of particular interest to them, e.g. Yugoslavia or Hungary. Some themes of great importance will be treated: the failure of parliamentary Liberalism (the 1890’s and 1930’s), the treatment of questions of nationalism and minority rights throughout the period; the rise of left-wing and political-Catholic parties; the relationship of agriculture and economic development; and the extraordinary cultural flourishing associated with ‘Vienna 1900’ but also extending to Prague and particularly Budapest; the process of Communist take-over. With the exception of some memoirs, the existing English-language literature should be adequate for the course.

HIST 5513 Venice between the Byzantines and the Ottomans (ca. 300 - ca. 1700 CE)
The historical interaction between the Republic of Venice and the two most important Mediterranean polities in the Medieval and Modern Era: the Byzantine and the Ottoman Empires.

SAMPLE OF RECENT PUBLICATIONS


• P. Duygulu, D. Arifoglu, M. Kalpakli, “Cross-document word matching for segmentation and retrieval of Ottoman divans”, Pattern Analysis and Applications..


• N. Stone, “The Russian Army in the First World War”, Mitt. Oesterreichischen Sudosteuroa-Inst Wirtschaft Politik (Forthcoming)


• N. Stone, Europe Transformed 1878-1919, Blackwells, (1999)


• K. Weisbrode, Churchill and the King, New York: Viking, (2013)


Faculty Profile:
Dr. Ozer Ergenc, Visiting Professor, Department of History

Ozer Ergenc received a Ph.D. in history from the Ankara University Faculty of Languages, History and Geography in 1974, following which he pursued postdoctoral studies at Freiburg University in Germany. Prior to joining Bilkent University as a full-time professor in 2006, he was a faculty member at Ankara University and in addition taught at universities including Bilkent and Middle East Technical as a visiting professor.

His research interests range from Ottoman urban history, with a focus on Ankara, Konya and Bursa, to the social and economic history of the Ottoman Empire, in areas including the history of mohair in the Ottoman Empire and the history of ordinary people, to Ottoman Turkish paleography and diplomatics, methodological approaches to Ottoman judicial court records, and spatial analysis of the Empire.

He has been a member of Turk Tarih Kurumu (the Turkish Historical Society), Tarih Vakfi (the History Foundation), TUBITAK (the Scientific and Technological Research Council of Turkey) and its Social Sciences and Humanities Research Group (SOBAK), and the Middle Eastern Studies Association.

Contact:
Dr. Mehmet Kalpakli
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The Department of International Relations offers graduate degree programs as advanced preparation for careers in teaching, research, government, journalism, international business, and international organizations.

The graduate program is designed to enhance students’ skills by means of carefully chosen graduate seminars and courses, which demand rigorous preparation and build confidence through active participation and discussion.

The basic goal of the program is to develop practical as well as theoretical competence in the field of international relations through refinement of the skills of critical thinking, analysis, and expression. As a reflection of the importance the department places on the ability of its students to communicate effectively, admission depends upon demonstration of English proficiency sufficient to begin graduate-level work.

**FACULTY**


**ALİ BİLGİÇ**, Associate Professor. Ph.D., International Politics, University of Wales, Aberystwyth, 2010. *Critical security studies, international relations theories, European security migration, Turkish foreign policy.*


**BERK ESEN**, Assistant Professor. Ph.D., Government, Cornell University, 2015. *International political economy, democratization and authoritarian regimes, state-building, comparative historical analysis, political economy of development, Turkish foreign policy, middle east and Latin American politics.*


**CLEMENS MAXIMILIAN HOFFMANN**, Assistant Professor. Ph.D., International Relations, University of Sussex, 2010. *Historical sociology, international relations theory, state formation, environment, African politics, Ottoman Empire, Turkish foreign policy.*

**PINAR İPEK**, Assistant Professor. Ph.D., International Relations, University of Pittsburgh, 2003. *International political economy, energy security, Turkish political economy, European Union energy policy.*

**ONUR İŞÇİ**, Assistant Professor. Ph.D., History, Georgetown University, 2014. *Diplomatic history, cold war studies, Imperial/Soviet Russian history, Ottoman/Turkish foreign affairs.*


**SEÇKİN KÖSTEM**, Assistant Professor. Ph.D., Political Science, McGill University, 2016. *International political economy, regional and rising powers, Russia, Eurasia.*

**TUDOR A. ONEA**, Assistant Professor. Ph.D., Political Studies, Queen’s University, 2010. *Grand strategy, Diplomacy, Security.*

**İBRAHİM ÖZGÜR ÖZDAMAR**, Assistant Professor. Ph.D., Political Science, University of Missouri-Columbia, 2006. *International relations theory, foreign policy analysis, research methods, American foreign policy, Black Sea politics.*


**PAUL ANDREW WILLIAMS**, Assistant Professor. Ph.D., Political Science, University of California, Los Angeles, 1997. *International relations theory, international political economy, global environmental politics.*

**ERİNÇ YELDAN**, Professor and Acting Department Chair. Ph.D., Economics, University of Minnesota, 1988.
MASTER OF ARTS IN INTERNATIONAL RELATIONS

Admission: Prospective students must have completed the Bilkent University requirements for a Bachelor of Arts degree in International Relations or the equivalent training. Applicants should take the ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı/Akademik Personel ve Postgraduate Education Entrance Examination) and must satisfy the announced minimum requirements. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of a foreign country may take the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of proficiency in English.

Degree Requirements:
1. Completion of at least 24 credit units of course work. There are seven required courses: Fundamentals of Social Research Design, Research Methods and Academic Publication Ethics, International Relations Theory, Issues in Turkish Foreign Policy, Pre-Thesis Seminar, Academic Practices and Master’s Thesis. Five elective courses can be selected from the offered graduate courses each semester.
2. Completion of an M.A. thesis proposal before the start of the second year.
3. An M.A. thesis must be submitted to and approved by the thesis defense committee.
4. A cumulative grade point average of at least 3.00 must be maintained for the totality of Master’s level work.

DOCTOR OF PHILOSOPHY IN INTERNATIONAL RELATIONS

The doctoral program is highly specialized. Its purpose is to develop the skills of doctoral candidates in international political analysis and to increase their capacity to conduct research on theoretical issues, international security studies, strategic studies, comparative foreign policy, international political economy, regional integration, global environmental problems, international law, and peacekeeping and conflict resolution, as well as area studies such as the European Union, the Balkans, Russia, the Middle East, Central Asia, and the Caucasus. The program is reserved for a limited number of students who are qualified and committed to spend several years conducting intensive research. The program is particularly suitable for students who wish to pursue an academic career.

Admission: Prospective students must have completed the Bilkent University requirements for a Master of Arts degree in International Relations or the equivalent. Applicants should take the ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı/Akademik Personel ve Postgraduate Education Entrance Examination) and must satisfy the announced minimum requirements. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of a foreign country may take the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of proficiency in English.

Degree Requirements: Students accepted into the program must complete at least 26 credit hours of course work. Students may take elective courses from other departments in accordance with IR Ph.D. curriculum requirements. A cumulative GPA of at least 3.00 must be maintained for Ph.D. course work. The doctoral program must be completed in at most 12 semesters.

MASTER OF INTERNATIONAL AFFAIRS AND PUBLIC POLICY (MIAPP) (Non-Thesis)

The curriculum of the Master of International and Public Policy (MIAPP) program is designed to provide students with a broad analytical background in the major fields of international affairs and European integration, combined with a specific focus on the newly emerging issues of governance and globalization. The program of study comprises 36 credits and is without the requirement of submitting a master’s thesis.

By underlining updated knowledge and skills essential to careers in the international, private, and public sectors, the program responds to new professional opportunities at home as well as abroad. The program addresses public governance, corporate governance, globalization, European integration, and other fundamental issues of 21st century global politics using an approach that incorporates a scholarly perspective as well as practical experience.

Admission: An undergraduate degree in international relations is not a prerequisite for admission. Graduates of other disciplines are also eligible and are encouraged to apply.

COURSE DESCRIPTIONS

IR 501 International Relations Theory
The main traditions and currents of thought in international political theory. Early thinking about international relations. Major twentieth century approaches: idealist-realist debate; the power politics approach and its fundamental concepts such as balance of power, national interest, nationalism and imperialism. Behaviorism; systems thinking; interdependence and structure list theories. Decision-making and integration theories.

IR 507 Foreign Policy of the United States
This course examines the making and execution of US foreign policy in terms of the following factors: constitutional checks and balances; religious and ideological traditions; Presidential doctrines and “the lessons of history”; economic tools and cultural diplomacy; the role of special-interest lobbies; and area-specific concerns.

IR 509 Pre-thesis Seminar
This course corresponds to MA students’ thesis proposal, finalized under their supervisors’ guidance.

IR 513 Game Theory and International Policy
This course is designed to introduce students to the main concepts and the applications of game theory to international politics. Accordingly, arms races, deterrence, crisis stability, arms verification, national security and war are among the subjects of this course.

IR 522 Foreign Policy Analysis
An advanced seminar on foreign policy analysis literature. Actor-specific focus, which assumes source of international politics is humans, acting individually or in groups. Modern foreign policy theory, data and analysis. Process of decision making, political, rational and psychological factors.

IR 531 Central Eastern Europe (1815-1945)
Political and military history of Eastern Central Europe with an emphasis on wars and revolutions between 1815 and 1945.

IR 543 International and Public Policy Decision Making
This course aims at a gentle introduction of students into formal political theory. It is basically divided into two parts: individual decision-making theory and game theory. The first part concentrates on individual preferences and choice including decision making under certain and risk, cardinal...
utility, subjective probability, the calculus and paradoxes of voting, and misperception of preferences. The second part includes two-person mixed-motive games, coalition-form games, concepts of equilibrium such as iterated elimination of dominated strategies and backward induction, Nash and subgame-perfect Nash equilibrium. These analytical tools would serve as nuts and bolts for the student to go beyond mere description of political events, either domestic or international, and to construct their own explanations of puzzling choices at those levels.

IR 547 International Politics
This course offers an introduction to the study of international politics. It aims to first provide the historical, conceptual, and theoretical tools and lenses for analyzing behavioral and institutional patterns in the international system, and then to use these analytical means in exploring major international issues and events. Particular emphasis will be given to topics of international security, such as major power rivalries, the impact of globalization on security, and the management of low intensity conflicts. Government experts and practitioners will be invited as guest lectures for certain specific issues, such as international terrorism and regional geostrategy.

IR 571 Russia and Turkey
This course is a unique seminar on the history of Turco-Russian relations in the course of history. Although it covers the period from 1552 to present, its main focus would be 20th century Turco-Russian relations, given the similarities of the "modernization" projects of both countries.

IR 572 European Union Integration, EU and OECD Economies
This course includes analyses of EU integration, globalization, regionalism and their relationship with nation states. Students will learn about the impact of EU integration on economic, political, cultural and social structures, the structure of the Turkish economy and the dynamics of its technological and socio-economic development. There will be a comparative analysis of EU and OECD economies and a transdisciplinary analysis of Turkey and the EU integration process.

IR 574 Turkey's International Relations
This course will first examine the structural and historical determinants of Turkish foreign policy, with an emphasis on the foreign policy decision-making mechanism, as well as the sources of change and continuity. This will be followed by first, a general exploration of the dynamics of the sub-system/region in which Turkey is located, and then more in-depth analyses of Turkey's particular relations with different geographical regions, such as Europe, Eurasia, the United States, and the Middle East. Some experts from the Turkish foreign ministry, as well as public figures with experience and expertise on relevant issues, will provide guest lectures.

IR 594 International Law and Organizations
International relations have legal and political sides. This comprehensive study will firstly analyze the normative side of international relations by describing and explaining the basic legal concepts of international law. At the later stage, there will be a comparative analysis of Turkey and the European Union's legal and economic structures, together with a transdisciplinary analysis of the EU and the Turkish Union.

IR 599 Master's Thesis

IR 614 New Directions in Security Studies
This course is designed as a post-graduate level introduction to new directions in the study of security. Since the late 1980s, there has been remarkable change in the way security is conceived, studied and practiced. The academic field of Security Studies has been the subject of intense academic, intellectual and political debate during this period. The main aim of this course is to introduce students to main debates in Security Studies by tracing the development of Security Studies from its Cold War past to its post-Cold War present and opening up alternative ways of thinking about the future.

IR 621 Current Debates in International Relations Theory
This course is designed as a post-graduate level introduction to current debates in International Relations theory. The content and nature of International Relations theory is by no means fixed. Indeed, International Relations theory has been the subject of intense academic, intellectual and political debate. The main aim of this course is to introduce students to some of the major debates in International Relations theory. The course also covers epistemological, ontological and methodological debates in IR. Specifically, the course aims to generate familiarity with the language of social research, the uses of theory and meanings of methodology in IR, ethical and political issues involved in the research process.

IR 625 Advanced Diplomatic History
The course is designed to help prepare students for the diplomatic history qualifying examination by introducing them to current literature and comparative history.

IR 629 Global Political Economy
This course is designed to explore questions relating to theory and process of increasingly globalizing international political economy. The purposes of the course are to expose students to major changes in the international political economy; to explore some of the theoretical debates over these changes; and, to examine the multitude of adjustment strategies states adopt to cope with changing structure of comparative advantage. Particular emphasis is placed upon the position of the middle-income developing countries (especially Turkey) within the global market structure.

IR 649 The Soviet Union and The Second World War
As a consequence of the Second World War, the Soviet Union became one of the preeminent powers in the world, imposed its ideology and ethos upon an array of other countries, and parlayed its victory over fascism into a new claim of legitimacy. This seminar will explore the origins, course and character, and impact of the Second World War, with special attention paid to the role of the USSR during the world's greatest conflict. The course will be organized topically, within a more or less chronological framework.

IR 662 EU Politics
This course is designed to provide graduate students with an advanced analysis of EU politics. After a general historical introduction, Part 1 discusses EU's institutional architecture. Part 2 dwells on an in-depth analysis of European integration theories. Part 3 explores various meanings of Europeanization before examining some of the most important EU policy areas, such as the single market. Part 4 concludes with a discussion of EU's recent enlargements and possible future scenarios.

IR 670 Topics in the History of Communism 1847-1953
This course takes the outstanding moments and writers in the history of Communism. It starts of course with Marx and the Communist Manifesto, and proceeds through the construction of Capital and the International to a discussion of the emergence of socialism especially in France and Germany. It moves on to a consideration of Lenin's adaptation of Marx to fit the world of Imperialism, and the position of large semi-capitalist states such as Russia (and later China). The success of the Bolsheviks in Russia alone is discussed, and then the emergence of the USSR as a superpower, especially with the Second World War. The course ends with the death of Stalin in 1953.

IR 679 Ph.D. Dissertation

IR 5100 Introduction to Security Studies
This course offers an introduction to the study of security. It traces the evolution of security studies from the study of
war and strategy to concerns with individual, societal and global security.

IR 5104 Issues in Turkish Foreign Policy
This course is not a historical account of Turkish Foreign Policy. Nor does it consist of a chronological description of the events and issues. It is designed to acquaint the candidates with conceptual and institutional frameworks useful to explain and understand Turkish foreign and security policy and the essence of Turkey’s diplomatic-strategic conduct. Nevertheless, as a prerequisite of this course, candidates are required to have a basic preliminary knowledge about the history of Turkey’s foreign relations. The approach of the course is critical as well as analytical. This means that the cause should underline not only the achievements, but also failures, contradictions, and deficiencies of Turkey’s foreign policy.

IR 5105 Issues in International Political Economy
This graduate seminar course explores a series of issues central to the field of International Political Economy (IPE). While the exact focus is contingent on the contemporaneous disciplinary and policy agendas, as well as on the research interests of the participants, the course is centrally concerned with integrating theory and practice in a thorough and critical engagement with both IPE as an academic field of study, and various substantive aspects of the current world political economy.

IR 5107 EU Public Policy
This course is designed to introduce students to the major policies of the EU. It starts with an overview of the functioning of the EU as a political system and policy process. The course then provides an understanding of the major EU policy areas, such as single market, monetary union, agriculture, regional policy, and common foreign and security policy.

IR 5109 The Politics of EU Enlargement
This course focuses on the politics of enlargement by the European Union. It examines successive rounds of enlargement and analyzes their evolution with reference to EU priorities as well as member states’ policies and intentions. The course combines theoretical insights with empirical analysis and offers a variety of perspectives from which students can assess for themselves the politics of enlargement. By the end of the course students should have become familiar with the EU, its politics and institutions as well as the theory and practice of EU enlargement.

IR 5110 Topics in Modern European History 1870-1970
This course will take the most significant episodes of modern European (and in part world) history with a view to encouraging students’ interpretive abilities. The topics will be Imperialism around 1890, the “Great Depression” of the later nineteenth century and what it meant, the spread of parliamentary constitutionalism, the rise of Socialism and of a new Political Catholicism. Minority nationalism will be examined, and the rise of Fascism and Communism. The course ends with the attempt to create a new Europe after 1947, and the involvement of the USA.

IR 5112 Conflicts in the Middle East
This course offers an advanced conceptual and empirical analysis of contemporary Middle East politics through an exploration of its main conflicts and developments since the end of World War II. From the Palestinian question, to peace and war in the region, and the “Arab Spring”; students will engage in critical evaluation of the roots of key Middle East conflicts, the role that social movements and media play in the regions’ trends and developments, and the involvement of superpower rivalry and impact on international politics. The course aims to provide students with an advanced understanding of key Middle East events and theories, and enhances their skill in interpreting political developments in the region. The course enables students to critically evaluate leading scholarship in the field of Middle East politics and international relations, and encourages students to develop their own positions on contemporary issues of the Middle East based on critical assessment of existing literature and empirical evidence.

IR 5114 Religion and IR Theories
The proposed course aims at increasing our understanding of how religion shapes international relations. The main topic of the course is the integration of religious subject matter into conceptual frameworks ranging from realism to liberalism and constructivism. The main question is how religion translates into international politics. Hence, theoretical and empirical views are blended together. The subject matter covers whether religious actors can act as strategic actors, whether religions can have variable impact upon war and the likelihood of war in addition to an analysis of international politics through the prism of religion and the interaction between secular and religious forces at global level.

IR 5115 Transnational Security
Various conceptualizations of security to develop a comprehensive understanding of the transnational challenges facing states and other actors as well as prospects for transnational cooperation. Reconsideration of theoretical positions, approaches, and tools used in security studies from a transnational perspective. New perspectives and policy suggestions to address the most hard-pressing problems of a transnational nature.

IR 5116 International State-Building
Dynamics of contemporary policy and practice of state-building interventions through relevant academic and policy literature on sovereignty, state and state ‘failure’ or ‘fragility’ and specific cases of international state-building interventions. Major theoretical approaches and recent experiences of intervention for constructing knowledge and evaluating the effectiveness and outcomes of the prevailing policy approaches devised as a solution to the problem of weak governance as a source of global insecurity.

IR 5119 Issues for Turkey in Global Political Economy
International/global political economy with a focus on issues important for Turkey through a historical overview of the political economy of Turkey in relation to structural economic transformations and political developments in the globalization process. Relationship between the institutional legacy of the early modernization, industrialization during the Ottoman Empire and state-led development in Turkey between 1908 and 1960s, including the role of state in economic growth and development within competing theories of political economy of development. Economic crises and market liberalization period between 1980 and 1991, specifically focusing on the changing role of state and continuities in state-society relationship within the theoretical debate about internationalization of state in globalization process and politics of income distribution in neoliberalism. Major changes and continuities for Turkey in trade, production/foreign direct investment, human development and income distribution in light of the previous debate on the role of state in international political economy.

MIAPP 501 Term Project
This course has an accompanying course. Students taking this accompanying course are first expected to agree on a topic with the professor of that course and then write a 5,000 words long term paper on that topic.

MIAPP 516 International Logistics
The course provides all of the concepts of international logistics with a special focus on management of international trade operations. The philosophy of international logistics and important international trade elements will be thought within the light of logistics management approaches. It aims to perceive the students the international logistics management and implementations and documentations of international trade. Within this scope, it has been targeted to introduce various sub concepts collectively through the baseline of international logistics and global marketing
along with the processes for the entities of foreign trade management to enable students to understand the effects of the international logistics on international economy and relations. The course begins with the general explanations of international supply chain management in line with international logistics infrastructure and continues with the main implementations of international trade. The course also includes international transportation and security issues along with the competitive support of international logistics within the context of theoretical knowledge.

**MIAAPP 555 Public Policy Making in the European Union**

This course is about policy processes in the EU. It is designed to equip students with knowledge, skills and research experience to analyze the challenges in the EU decision-making process. During the lectures, we will try to understand the policy making process in the EU by touching on the most complicated policy areas. Specific focus will be put on the current financial crisis and contemporary debates on the future integration of the EU. At the end of this course, students should be familiar with the complex EU policy making and policy implementing processes with a capacity to examine supranational policy problems and controversies, as well as to develop solutions in the field. The participants of the course will be able to analyze the political environment of European public policy and form effective strategies.

**SAMPLE OF RECENT PUBLICATIONS**

- E. Aydini, G. Biltekin, “Time to Quantify Turkish Effective Strategies. The political environment of European public policy and form controversies, as well as to develop solutions in the field. The participants of the course will be able to analyze the political environment of European public policy and form effective strategies.

**SAMPLE OF RECENT PUBLICATIONS**

- E. Aydini, G. Biltekin, “Time to Quantify Turkish Effective Strategies. The political environment of European public policy and form controversies, as well as to develop solutions in the field. The participants of the course will be able to analyze the political environment of European public policy and form effective strategies.


- A. Bilgic, “We are not barbarians: Gender Politics and Turkey’s Quest for the West”, International Relations, 29, 198-218 (2015)


- S. Guner, “Secularization, Evolution, and Politics”, Politics, Religion and Ideology (Forthcoming)


- C. Hoffmann, C. Cemgil, “The (un)making of the Pax Turca in the Middle East: Understanding the social-historical roots of foreign policy”, Cambridge Review of International Affairs (Forthcoming)


- O. Ozzdamar, “Leadership Analysis at a “Great Distance”: Using the Operational Code Construct to Analyze Islamist Leaders”, Global Society (Forthcoming)


Faculty Profile:  
**Dr. Ersel Aydınlı**,  
Professor,  
Department of International Relations

Ersel Aydınlı specializes in security, transnational relations/terrorism, and Turkish foreign and domestic affairs. He holds an M.A. in international relations from the George Washington University and a Ph.D. in political science from McGill University, and did postdoctoral work at Harvard University’s Kennedy School of Government. Prior to joining academia, Dr. Aydınlı worked in the Turkish state security sector. He has taught at Middle East Technical and George Washington universities. He joined Bilkent in 2001. After chairing the Department of International Relations during 2006-2010, he was appointed as executive director of the Turkish Fulbright Commission, a position in which he continues to serve. Dr. Aydınlı is author of *Violent Non-State Actors: From Anarchists to Jihadists* (Routledge, 2016) and *Yontem, Kurum, KompoTürk Uluslararasi İlişkiler Disiplininde Vizyon Araştırmalar* (with E. Kurubaş and H. Özdemir, 2nd edition, 2014). He has also edited such volumes as *Paradigms in Transition: Globalization, Security and the Nation State* (with James N. Rosenau, SUNY Press, 2005) and *Emerging Transnational (In) Security Governance: A Statist Transnationalist Approach* (Routledge, 2010).

He has published numerous articles in journals including *Foreign Affairs*, the *Review of International Studies*, the *Journal of Peace Research*, *Third World Quarterly*, *Security Dialogue*, *Governance*, the *Journal of Democracy*, the *International Studies Review*, and *Terrorism and Political Violence*. He is a frequent commentator for various domestic and international television channels on questions of security/terrorism and Turkish foreign and domestic affairs.

He is the co-founder and chief editor of *All Azimuth*, the journal of the İhsan Doğramacı Center for Foreign Policy and Peace Research, of which he is a co-director and board member.

Faculty Profile:  
**Dr. Selver B. Şahin**,  
Assistant Professor,  
Department of International Relations

Selver B. Şahin holds a Ph.D. in political science from the University of Canterbury (New Zealand). Prior to joining Bilkent University in September 2013, she worked as a researcher and lecturer in New Zealand and Australia.

Dr. Şahin’s research is focused on the forms and consequences of post-conflict reconstruction and state-building interventions in war-affected and fragile states. She has extensive field research experience in conflict-affected settings both independently and as a member of various teams. Her research has been published in her book *International Intervention and State-Making: How Exception Became the Norm* (Routledge, 2015) as well as in various journals including *International Peacekeeping*, *Democratization*, *Asian Survey*, the *Australian Journal of International Affairs*, and the *Journal of Balkan and Near Eastern Studies*.

She is a recipient of a grant under a program TÜBİTAK (the Scientific and Technological Research Council of Turkey) administers for researchers returning to the country; the grant supported her research project on the societal and institutional dimensions of the peace-building environment in Kosovo and Macedonia. Dr. Şahin also acts as an honorary research fellow and contact in Turkey for the UN Global Compact Cities Program.
The Department of Political Science and Public Administration offers advanced degree programs at the M.A. and Ph.D. levels. The M.A. degree in political science is designed to provide students with a solid background in the study of this discipline. M.A. applicants are expected to have an undergraduate degree in political science or a cognate field. The M.A. program is designed to offer students who wish to continue their studies a smooth transition into the department’s Ph.D. program. Apart from this, the M.A. program offers an excellent foundation in the study of political science and research training.

The Ph.D. program focuses primarily on preparing candidates for university-level teaching and research. It includes courses intended to broaden and deepen students’ knowledge in four core areas of political science: comparative politics, political theory, Turkish politics, and social theory and cultural studies. The program provides students with a sophisticated conceptual framework and analytical skills, enabling them to make original contributions to theory by specializing in a particular aspect of one of the above-mentioned core areas.

**FACULTY**


**İLKER AYTÜRK**, Associate Professor. Ph.D., Near Eastern and Judaic Studies, Brandeis University, 2005. *Nationalism, language politics, Turkey and Israel.*


**H. TOLGA BÖLÜKBAŞI**, Assistant Professor. Ph.D., Sociology, McGill University, 2007. *Comparative and international political economy, political economy of European integration and Europeanization, comparative welfare states and labor markets, political economy of Turkey.*


**ESRA ÇUHADAR**, Associate Professor. Ph.D. Maxwell School of Citizenship and Public Affairs, Syracuse University, 2004. *Conflict, resolution and peacebuilding (negotiation and mediation processes), foreign policy decision-making, political psychology, leadership.*

**TAHİRE E. ERMAN**, Associate Professor. Ph.D., Environmental Psychology, City University of New York, 1992. *Migration, squatting housing, migrant communities, informal sector, urban politics, globalization and urban space, ethnicity and Alevism in the urban context, women’s issues, urban poverty.*

**IOANNIS N. GRIGORIADIS**, Associate Professor. Ph.D., Politics, University of London, 2005. *Comparative and international politics, democratization, nationalism, energy, Middle East, Balkan and Turkish politics.*

**JALE GÜRZUMAR**, Instructor. MBA, Department of Business Administration, Middle East Technical University, 1986.

**BANU HELVACIOĞLU**, Adjunct Senior Lecturer. Ph.D., Political Studies, Queen’s University, 1988. *Modern political theory, history of political thought, continental political philosophy, aesthetics of politics.*


**AIDA JUST**, Associate Professor. Ph.D., Political Science, The State University of New York (at Binghamton), 2005. *Political behavior, public opinion, and political institutions, particularly with respect to the issues of democratic legitimacy, political representation, and international human migration.*

**DANIEL JUST**, Associate Professor. Ph.D., Comparative Literature, NYU, 2003. *Sociology of literature, political theory, as well as issues of cold war culture and the interaction between literature and politics.*

**NEDİM KARAKAYALI**, Associate Professor. Ph.D., Sociology, University of Toronto, 2003. *Social and political theory, history of social and political thought, international migration, science and technology studies, sociology of culture.*
POLS 602 Seminar in Comparative Politics
This seminar is designed to introduce students to the major theoretical and conceptual debates in the sub-field of comparative politics. The weekly readings are chosen to reflect the variety of topics and methodological approaches in comparative politics.

POLS 604 Democratization Process in Turkey
This course will deal with the processes of democratization and liberalization in Turkey particularly in the light of constitutional and legislative reforms adopted between 1993 and 1995. Attention will also be given to the impact of the EU membership perspective.

POLS 605 The Public Sphere
This course takes the public sphere as the main field of politics where different political ideologies emerge, contending ideologies clash and power relations take shape. Originally developed by Jurgen Habermas, the notion “public sphere” has been extensively and critically debated by writers in relation to democracy, civil society, state-society relations, political participation and the place and function of political identities in relation to these. This course surveys this debate and focuses on the different ways in which the “public sphere” is understood and contextualized, particularly in relation to ethnic, racial and gender identities.

POLS 606 Seminar in Political Theory
This course engages in a critical reading of a select number of contemporary thinkers from K. Marx in 19th to L. Irigaray 20th, and to S. Zizek in 21st century. The course starts with the most recent texts and moves backward in history. Although the questions posed each week revolve around the most pressing issues of the present political conjuncture, such controversial concepts as democracy, difference, representation and the subject are analyzed from within a broad range of perspectives.

POLS 607 Political, Culture, Nation and Gender
This course takes the realm of urban daily life as the locus of politics and investigates different dimensions of the making of national identities in relation to issues of gender, race, ethnicity, and class. The readings have been structured so as to explore the complexity of national identities and founding ideologies around several dimensions. First, they will address the ways in which national ideologies are constructed and propagated in relation to race, ethnicity, gender, class, religion or colonial relations, as one or several of these elements converge in the making and contestations of national ideologies in different contexts. Second, the course will simultaneously explore different mediums of representation in the making and contestations of national ideologies, ranging from popular music, novels, architecture, art, films and mass media to clothing, food and other daily practices.

POLS 608 Politics, Culture, Nation and Gender
This course addresses the theoretical and methodological issues in studying the city as a socio-cultural entity, and it aims to reveal urban dynamics that shape the city and city spaces in a variety of contexts. Attention is paid to emerging social and spatial landscapes in our era of globalization. In the class such concepts and topics are explored as the global city, the city in modernity and post-modernity, urban ethnography, suburbanization, gentrification and ghettoization, gated communities, the privatization of urban space, and urban governance, as well as Third World urbanization, settlement formation, migrant enclaves, and local politics. The city is approached critically in terms of gender, ethnicity and class.

POLS 609 Issues in Urban Studies
This course addresses the theoretical and methodological issues in studying the city as a socio-cultural entity, and it aims to reveal urban dynamics that shape the city and city spaces in a variety of contexts. Attention is paid to emerging social and spatial landscapes in our era of globalization. In the class such concepts and topics are explored as the global city, the city in modernity and post-modernity, urban ethnography, suburbanization, gentrification and ghettoization, gated communities, the privatization of urban space, and urban governance, as well as Third World urbanization, settlement formation, migrant enclaves, and local politics. The city is approached critically in terms of gender, ethnicity and class.

POLS 610 Research Methods
The purpose of this course is to introduce you to the qualitative research methods in social sciences. Emphasis will be placed both on acquiring skills as a researcher and on learning to evaluate empirical work in political science. We will take up, in turn, basic concepts of qualitative research design and data collection. This is a seminar course and students will design their own research project in the light of the methods discussed in class sessions.

POLS 612 Seminar in Social and Cultural Studies
This course brings together concepts and perspectives from various fields of the human sciences such as sociology,
POLS 645 Voting Behavior and Political Parties
Electoral politics in contemporary democracies; party organization and electoral strategies, citizen political participation and vote choice, the consequences of political institutions, the economy, and social identities.

POLS 646 Politics of the Self
This course aims to provide an in-depth understanding of divergent perspectives in the social sciences on selfhood, with a particular focus on the challenges that individuals face in forming themselves as autonomous subjects in modern societies. Among the topics that will be discussed in the course are: the relationship between ethics and politics; identity politics in modern societies; the role of reflexivity in the formation and transformation of social structures; alternative types of subjectivity; individualism; and, the role of modern technologies in changing contemporary individuals' self-perception.

POLS 646 Politics of the Self
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POLS 5431 Politics and Society in Turkey
This course explores the debates and controversies over modernization, westernization, nationalism and secularism as they become the main themes of the constitutive norms of the modern Turkish Republic. After briefly tracing the historical developments around these themes since the founding of the Republic, the course examines different dimensions of Turkish nationalism and its aspirations for a West-oriented modernity in various contexts of politics and daily life such as the use of public spaces, urban planning issues, differentiation of gender roles, or trends in popular culture.

POLS 5437 Politics and Literature
This course discusses literature as a social product, analyzing ways in which it represents reality, reflects on it, and reacts to it. Focusing on the modern period from the nineteenth century to the present, the course examines political aspects of different literary paradigms from realism to postmodernism. We will inquire into the political potential of these paradigms and their political aspirations, and will ask how these paradigms have functioned as modes of social critique and how they have imagined social and political alternatives.

POLS 5451 Comparative Political Economy of Development
This seminar course exposes students to some of the main debates in the field of economic and political development and underdevelopment.

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POLS 5462 Globalization: Theories and Experiences
How thinking about the relationship between political and economic processes has changed in response to the interaction of the domestic and international arenas using examples from Latin America, East Asia, South Asia, the Middle East and North Africa. The experiences of late developers contrasted with those of "early" industrializers to illustrate the importance of "world time" in shaping their developmental trajectories.

POLS 5467 Conflict, Violence, and Peace
This is a seminar course that dwells on various theories of social and political conflict, violence, and peace. The course brings together different theoretical approaches developed in sociology, social psychology, cultural anthropology, and political science in addition to some classical texts in philosophy with regard to conflict, violence, and peace. Some of the issues covered are: the origins of social conflict, functions of conflict in a society, different types of social conflict, structure-agency debate with regard to conflict, escalation of conflict, psychological dynamics of social conflict and violence. The course will also examine different theoretical approaches that developed in various social science disciplines with regard to peace and reconciliation.

POLS 5486 Issues in Comparative Politics
This module introduces students to advanced research in comparative politics. It centers on the following topics: politics and government, the state, democracy, authoritarian rule, the comparative approach, political culture, political communication, political economy, political participation,
elections and voters, interest groups, political parties, constitutions and the legal framework, multilevel governance, legislatures, the political executive, public management and administration, and public policy.

POLS 5490 Democracy, Development, and Human Rights
This course is designed to introduce students to the issues of democracy, development, and human rights from the perspective of comparative politics. We will discuss different conceptualizations, theories, and measurements of these phenomena, analyze the extent to which existing theories contradict or complement each other; and whether their policy prescriptions have been successful in the real world. While the course focuses on how democracy, development, and human rights relate to each other, we will also address the effects of domestic and international institutions, natural resources, political culture, and globalization. The course is designed to provide a general understanding of the patterns and challenges to democracy, development, and human rights; however, we will also pay some attention to regional differences among Latin America, East Central Europe, Asia, and the Middle East.

SAMPLE OF RECENT PUBLICATIONS
- J. Alexander, “Who was the First Philosopher? Or, How Many Does It Take?”, Think (Forthcoming)
- H.T. Bolukbasi, K.G. Oktem, “Conceptualizing and operationalizing social rights: towards higher convergent validity in SCIP and CWED”, J of European Social Policy (Forthcoming)


• Z. Sarigil, E. Karakoc, “Inter-ethnic (In)tolerance between Turks and Kurds: Implications for Turkish Democratisation”, South European Society and Politics (Forthcoming)


• Z. Sarigil, “The Turkish Military: Principal or Agent?”, Armed Forces and Society, 40, 168-190 (2014)


Contact: Dr. Esra Çuhadar (Graduate Student Advisor)
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  Fax: +90 312 290 2742
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  pols.bilkent.edu.tr
Faculty Profile: Dr. Aida Just, Associate Professor, Department of Political Science and Public Administration

Aida Just received a Ph.D. in political science from the State University of New York (SUNY) at Binghamton in 2005. Prior to assuming her current position at Bilkent, Dr. Just was a tenured faculty member in the Department of Government at the University of Essex (2007-2010), and a visiting scholar at Columbia University (2013). She is also a member of the planning committee of the international election study project, the Comparative Study of Electoral Systems (2014-2018). Dr. Just’s research interests focus on comparative political behavior, public opinion, and political institutions, particularly with respect to the issues of democratic legitimacy, political representation, and international migration.

Her publications include articles in the Journal of Politics, the British Journal of Political Science, Comparative Political Studies, the European Political Science Review, the Journal of Peace Research, Party Politics, Electoral Studies, Social Science Research, and the Journal of Political and Military Sociology, as well as contributions to the edited volumes The Social Logic of Politics (Temple University Press, 2005), and The Oxford Research Encyclopedia of Politics (Oxford University Press, 2017) Political Parties and Partisanship (Routledge, 2009). Dr. Just’s research has been recognized by several international awards, including the Best Paper Award from the Journal of Politics in 2008, and the award for the Best Paper on European Politics & Society from the American Political Science Association (APSA) in 2008. She also received the Emerging Scholar Award (GEKIP) from the Turkish Academy of Sciences (TÜBA) in 2012.

Faculty Profile: Dr. Metin Heper, Professor, Department of Political Science and Public Administration

Metin Heper received a Ph.D. in Public Administration from Syracuse University in 1971. He has been a research fellow at Harvard University, a Fulbright Scholar and visiting professor at the University of Connecticut, a Lester Martin Fellow at the Hebrew University of Jerusalem, a Simon Senior Research Fellow at the University of Manchester (UK), and a research fellow, Madeleine Haas Russell Visiting Professor of Non-Western and Comparative Politics, and a visiting professor at Princeton University. At Bilkent University, he is the founding chair of the Department of Political Science and has served as university provost and dean of the Faculty of Economics, Administrative, and Social Sciences.

A founding member of the Turkish Academy of Sciences, Prof. Heper is the author of several books, including The State Tradition in Turkey, İsmet İnönü: the Making of a Turkish Statesman, The State and Kurds in Turkey: The Question of Assimilation, and the Historical Dictionary of Turkey. He has published a large number of articles in leading international journals, and served as the editor or coeditor of Islam and Politics in the Modern Middle East, The State, the Military and Democracy in Turkey, The State and Public Bureaucracies: A Comparative Perspective, Strong State, Economic Interest Groups: The Post-1980 Turkish Experience, Institutions, Democratic Statecraft, and The Routledge Handbook of Modern Turkey. Prof. Heper is the recipient of the Scientific and Technological Research Council of Turkey’s 2016 Science Award in the Social Sciences.
The M.A. and Ph.D. programs in the Department of Psychology are designed to build a strong, interdisciplinary background in theory and research in the psychological sciences. The programs focus on cognitive, social and developmental as well as neuroscience. Graduate students are expected to participate in research activities upon entering the program. To support psychological research, the university has developed an infrastructure that includes the National Magnetic Resonance Research Center (UMRAM), along with state-of-the-art research laboratories equipped with observation rooms for testing children and adults, a genetic testing room, and testing rooms for psychophysical and behavioral experiments.

**FACULTY**


**JEDEDIAH ALLEN**, Assistant Professor. Ph.D., Developmental Psychology, Lehigh University, 2012. Imitation, infant research methodology, the nativist-empiricist debate, the emergence of new knowledge.


**HÜSEYİN BOYACI**, Associate Professor. Ph.D., Physics, Bilkent University, 1999. Visual perception, cognitive neuroscience.


**GÜL GÜNAYDIN**, Assistant Professor. Ph.D., Social and Personality Psychology, Cornell University, 2013. Interpersonal cognition, impression formation, close relationships and mental representations of close relationship partners.


**ALİ KHATIBI**, Assistant Professor. Ph.D., Psychology, University of Leuven, Belgium, 2014. Pain communication, cerebrospinal correlates of pain, cognitive bias in pain, cognitive neuroscience, pain management.


**EZGİ SAKMAN**, Instructor. Ph.D., Social Psychology, Middle East Technical University, 2016. Attachment system and its activation, functionality of insecure attachment in cultural context.

**TIMOTHEA TOULOPOULOU**, Visiting Associate Professor and Department Chair. Ph.D., Neuropsychology, University of London, 2001. Abnormal psychology, biological psychology, brain development, schizophrenia.

**MASTER OF ARTS IN PSYCHOLOGY**

**Admission:** Applicants must have a degree from a related undergraduate program. Applicants who are Turkish citizens should take the ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı/Academic Personnel and Postgraduate Education Entrance Examination). Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of a foreign country may take the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of proficiency in English. Minimum requirements are announced by the Graduate School of Economics and Social Sciences.
Degree Requirements: Candidates must successfully complete at least 21 credits and 11 courses, and must prepare and defend a thesis.

DOCTOR OF PHILOSOPHY IN PSYCHOLOGY

Admission: Applicants must have a degree from a related undergraduate program for the Doctor of Philosophy Program with a Master’s and a degree from a related graduate program for the Doctor of Philosophy Program with a Master’s. Applicants who are Turkish citizens should take the ALES (Akademik Personel ve Lisansüstü Eğitimİ Girişİ Sirası) Examination). Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of a foreign country may take the GRE (Graduate Record Examination). All non-native speakers of English are required to submit proof of proficiency in English. Minimum requirements are announced by the Graduate School of Economics and Social Sciences.

Degree requirements: Candidates with a master’s degree must successfully complete at least 21 credits and 11 courses. Those without a master’s degree must successfully complete at least 45 credits and 20 courses. All candidates must prepare and defend a dissertation.

COURSE DESCRIPTIONS

PSYC 501 Advanced Cognitive Psychology
This course will serve as a general introduction to cognitive psychology at a graduate level. It aims to give breadth and depth of expertise to cognitive area students and relevant background knowledge to non-cognitive area students, and to highlight methods and approaches as well as new trends in cognitive psychology.

PSYC 502 Advanced Developmental Psychology
This course is a general introduction to developmental theory and research. It will cover developmental theories such as attachment theory, Vygotsky, and Piaget’s theories, etc. as well as areas of research such as language development, infancy, social cognition, emotional development, moral development and cognitive development.

PSYC 510 Advanced Social Psychology
This graduate seminar aims to survey cutting-edge theory and research on topics at the heart of social psychology. Students will read selected social psychological articles from top journals in the field and will be encouraged to think critically about social psychological research and to identify strengths and weaknesses of research studies.

GE 512 Quantitative Data Analysis
Professional statistical training while working with actual research data sets. Working with real life data to calculate descriptive statistics and perform inferential statistical tests. Practical training in the use of statistical software to analyze data sets. Sets of skills that enable to work with research data in professional settings. Specific tests conducted appropriate for a) relevant research questions, and b) structure of data (e.g., interval/ratio vs. nominal data). Tests possibly including, but not necessarily limited to, t-tests (single-sample, repeated-measures, and between-subjects), ANOVA (one-way, factorial, within-subjects, between-subjects, mixed models, and ANCOVA), correlation (zero-order bivariate, part, and partial), regression (e.g., simple linear regression, multiple regression, and logistic regression), as well as non-parametric tests (e.g., chi-square analyses, Mann-Whitney U test, and Kruskal-Wallis’ H).

PSYC 515 Selected Topics in Psychology I
The aim of this course is to help students obtain more in-depth knowledge in a sub-area of psychology. To this end, this graduate seminar will survey cutting-edge theory and research on a selected topic in psychology.

PSYC 535 Meta-analysis

PSYC 575 Advanced Training in Psychological Research I
The aim of this course is to help students obtain skills necessary to carry out independent research by gaining an integrated, hands-on experience with conducting research and preparing research reports in the psychological sciences. To obtain these skills, students will work with a faculty member on a research project other than their thesis project.

PSYC 591 Pro-Thesis Seminars I
Students will prepare for their thesis work by presenting material related to their thesis and attending presentations of other students.

PSYC 599 M.A. Dissertation
Students add this course to work on their master’s thesis every semester after their thesis advisor and topics are determined.

GE 590 Academic Practices
This course aims to contribute to the preparation of graduate students for academic studies and research. It includes practical classroom teaching, practical lab assistance and teaching, practice in conducting exams and grading assignments.

PSYC 691 Pro-Thesis Seminars II
Students will prepare for their doctoral dissertation by presenting material related to their dissertation and attending presentations of other students.

PSYC 699 Ph.D. Dissertation
Students add this course to work on their Ph.D. dissertation every semester after their thesis advisor and topic are determined.

GE 500 Research Methods and Academic Publication Ethics
Preparation of graduate students for their careers. Regular discussion of term project, thesis, or dissertation with academic advisor. Attendance in various research seminars or scholarly talks offered regularly at the departments. Participation in a series of independent modules including workshops, short courses, and seminars in the Fall and Spring semesters on “Academic Integrity”, “Effective Teaching”, and other topics such as doing literature searches and publishing.

GE 690 Academic preparation for doctoral students
This course aims to contribute to the preparation of doctoral students for their academic careers. It includes practical classroom teaching, practical lab assistance and teaching, practice in conducting exams and grading assignments. It requires attendance in various research seminars or scholarly talks offered regularly at the departments as well as participation in a series of independent modules including workshops, short courses, and seminars in the Fall and Spring semesters on “Academic Integrity”, “Effective Teaching”, and other topics such as doing literature searches and publishing.

SAMPLE OF RECENT PUBLICATIONS


• A.Arslan-Ergul, M.M. Adams, "Gene Expression changes in aging zebrafish (Danio rerio) brains are sexually dimorphic", BMC Neurosciences, 15, 29-1-11 (2014)

• E.D. Celebi-Birand, E.T. Karoglu, F.Doldur-Balli, M.M. Adams, "Mammalian Target Of Rapamycin (mTOR), Aging, Neuroscience, And Their Association With Aging-Related Diseases", Molecules To Medicine, K. Maiase (Eds.), pp. 185-205, United Kingdom: Elsevier (Forthcoming)

• D.Sznycer, L.Al-Shawaf, Y.Bereby-Meyer, …, L.Cosmides, 205, United Kingdom: Elsevier (2016)


• D.M.G. Lewis, L.Al-Shawaf, M.C. Jankiak, S.P.Akunebu, "Integrating molecular genetics and evolutionary psychology: Sexual jealousy and the androgen receptor (AR) gene", Personality and Individual Differences (Forthcoming)

• D.M.G. Lewis, M.Anderson, L.Al-Shawaf, "Contemporary evolutionary psychology and the evolution of intelligence. Commentary on Burkhart et all.", Behavioral and Brain Sciences (Forthcoming)


• L.Al-Shawaf, "The evolutionary psychology of hunger", Appetite, 105, 591-595 (2016)


• J.W.P. Allen, "How to help: can more active behavioral measure help transcend the infant false-belief debate?", New Ideas in Psychology, 39, 63-72 (2015)


• M. Besken, "Picture-perfect is not Perfect for Metamemory: Testing the Perceptual Fluency Hypothesis with Degraded Images", J of Experimental Psychology: Learning, Memory, Cognition, 42, 1417-1433 (2016)


• H. Boyaci, K. Simsek, E. Subasi, "Effect of contiguity and figure-ground organization on the area rule of lightness", J of Vision, 14, 1-11 (2014)

• M. Manassi, S. Lonchamp, A. Clarke, M.H. Herzog, "What crowding can tell us about object representations", J of Vision, 16, 35-1-13 (2016)


• J.E. Corbett, "The Whole Warps the Sum of Its Parts: Gestalt-Defined-Group Mean Size Biases Memory for Individual Objects", Psychological Science (Forthcoming)

• J.E. Corbett, P.Venuti, D. Melcher, "Perceptual Averaging in Individuals with Autism Spectrum Disorder", Frontiers in Psychology (Forthcoming)


• S. Salman-Engin, T. Little, V. Gaskin-Butler, J. McHale, "A Prenatal Coparenting Intervention with Unmarried Father-Mother Dyads: Fidelity of Intervention Delivery by Male-Female Community Mentor Teams", J of Nursing Research (Forthcoming)


• G. Gunaydin, E. Selcuk, V. Zayas, "Impressions Based on a Portrait Predict, 1-Month Later, Impressions Following a Live Interaction", Social Psychological and Personality Science (Forthcoming)


• G. Gunaydin, J.E. DeLong, "Reverse correlating love: Highly passionate women idealize their partner's facial appearance", Pl and E, 10, 0121094-1-10 (2015)


• A. Khatibi, “Be precise and suffer less pain! A comment on “A brief intervention utilising visual feedback reduces pain and enhances tactile acuity in CLBP patients””, J of Back and Musculoskeletal Rehabilitation (Forthcoming)


• T. Toulopoulou, M. Picchioni, P.B. Mortensen, L. Petersen, “IQ, the Urban Environment, and Their Impact on Future Schizophrenia Risk in Men”, Schizophrenia Bulletin (Forthcoming)


Faculty Profile: Dr. Timothea Touloupolou, Visiting Associate Professor, Department of Psychology

Timothea Touloupolou received her Ph.D. from the University of London in 2001. She completed most of her postgraduate training and began her career at the Institute of Psychiatry, Psychology and Neuroscience at King’s College London, where she retains a visiting position. After heading the Psychosis Lab and serving as the director of Biopsychosocial and Developmental Research at the University of Hong Kong, she was appointed chair of the Department of Psychology at Bilkent University in September 2015.

Dr. Touloupolou’s research fellowships have included a Canon Foundation in Europe Research Fellowship (2003) that allowed her to do work at Hamamatsu Medical School in Japan; a two-year Young Investigator Award (2005) from the National Alliance of Research on Schizophrenia and Affective Disorders (USA) that she completed at Harvard Medical School; and a one-year fellowship (2011) from the Chinese Academy of Sciences that she completed at the Institute of Psychology in Beijing, China.

Dr. Touloupolou served as lead scientist for the Genes and Cognition work package of the European Community’s 6th Framework Programme, and is a partner in the (current) 7th Framework Programme. She has received grants or subcontracts from the Economic and Social Research Council (UK), the Research Grants Council (Hong Kong), and the National Institutes of Health (USA). She reviews for numerous journals on a regular basis, is a member of the editorial boards of several journals, and serves as a fellowship and grant reviewer for organizations including the Wellcome Trust (UK), the Medical Research Council (UK), and the European Research Council.

Research in her lab focuses on understanding the genetic, neurobiological, cognitive, and environmental mechanisms that influence an individual’s susceptibility to developing schizophrenia.

Faculty Profile: Dr. Gül Günaydın, Assistant Professor, Department of Psychology

Gül Günaydın received a bachelor’s degree in business from Middle East Technical University. Before starting her graduate education at Cornell University, she spent a year at the University of California, Berkeley, as a Fulbright Fellow, conducting research on interpersonal relationships. She completed a Ph.D. in psychology at Cornell and joined the Bilkent University Department of Psychology as an assistant professor in 2013.

In her research, Dr. Günaydın studies interpersonal relationships using a multidisciplinary approach that draws on research and theory from social and cognitive psychology. Her current research focuses on how others, from unknown individuals to romantic partners, are mentally represented, and the consequences of those representations for impression formation, interpersonal behavior, and emotion regulation.

Dr. Günaydın’s research has been funded by grants and awards from TÜBİTAK (the Scientific and Technological Research Council of Turkey) and TÜBA (the Turkish Academy of Sciences). Dr. Günaydın is currently an associate editor for Frontiers in Psychology and has recently received the TÜBA Outstanding Young Scientist Award. Her research has been published in journals including the Journal of Personality and Social Psychology, the Journal of Experimental Social Psychology, and Social Psychological and Personality Science.
The Department of Archaeology offers a unique opportunity for graduate students to pursue the study of Anatolian, Near Eastern, and Mediterranean art and archaeology in a multicultural setting. Given its growing international prominence and its location in the heart of Turkey, Bilkent University provides an ideal environment for students interested in this field. Within easy reach of Ankara are central Anatolian sites such as Boğazköy, Alacahöyük, Gordion, and Pessinus; the west and south coasts of the country are particularly rich in classical sites. The department arranges field trips to museums and sites in the vicinity of Ankara and further afield. There are ample resources for research, as the libraries and museums in Ankara are easily accessible, and the archaeology section of Bilkent's library is developing rapidly.

Since its inception in 1988, the Department of Archaeology has attracted an international faculty. Current professors come from Turkey, France, Great Britain, Canada, Germany, and the United States. Turkish and foreign scholars are regularly invited to give guest lectures and seminars on their excavations and fields of expertise and workshops on technical subjects relating to archaeology.

The department offers a Master of Arts program in Anatolian art and archaeology. Students come from a variety of academic backgrounds, archaeology and other. The program aims to impart a broad knowledge of the field, but students also develop knowledge of a particular area through their choice of courses and, especially, thesis topic. After completing this program, most students continue on to Ph.D. studies, in the United States and Canada (at such universities as Boston, Brown, Harvard, Illinois, Pennsylvania, Toronto, and Victoria), Europe (Cambridge, Liverpool, Marburg, Newcastle, Tübingen, and Vienna), and Turkey (Ege, Muğla, and Istanbul).

**Research activities:** Department members are engaged in a variety of research activities. The department sponsors one major research project, excavations at Kinet Höyük near Dörtöl (Hatay) in southeastern Turkey. Kinet Höyük is an ancient harbor town occupied from the Neolithic to the Hellenistic periods, followed by a brief resettlement as a Crusader fort. The site has long been identified as Classical Issos, the town near which Alexander the Great defeated the Persian king, Darius III, in 333 BC. Excavations concentrated on the Bronze-Iron Age and Medieval levels in order to investigate this port's economic and cultural features within an eastern Mediterranean context.

Field work at Kinet Höyük was carried out from 1992 to 2012; preparation of the final reports in now in progress. In addition to this department-sponsored project, department faculty are currently involved in excavation, survey, and publication work at a number of sites in Anatolia and neighboring regions. These sites include Alaca Höyük (Bronze Age, Çorum province), the Letoon (a Greco-Roman sanctuary in Lycia), and Akkerman (a Late Antique – Ottoman fortress in Ukraine). Other projects include the publication of a corpus of Roman amphoras in the museum of Turkey's Black Sea region, a result of excavations conducted in an amphora workshop at Sinop.

A multidisciplinary project (archaeology, chemistry, and physics) to analyze the composition of stone and metal objects from central Anatolian sites is being coordinated by Dr. Thomas Zimmermann in collaboration with Bilkent's Department of Chemistry, the Turkish Nuclear Research and Training Center, the central laboratories at the Museum of Anatolian Civilizations, and Ankara University. Currently, Neo-Assyrian objects from Ziyaret Tepe are being examined as a new facet of this endeavor.

Participation in a field project is encouraged for all students in the M.A. program. All students have the opportunity to participate in the department's survey, excavation, and publication projects, and arrangements can be made for students to take part in excavations and other research projects sponsored by other institutions, or to acquire work experience in a museum. Over the years, Bilkent students have been involved in field projects at such sites as Arıycanda, Bodrum, Bozburun, Çatalhöyük, Ephesos, Gordian, Ilıpinar, Kaman-Kalehöyük, Pessinus, Sagalassos, Sardis, and Troy, and have occasionally ventured further afield to excavations in England, France, Israel, and Italy.

**FACULTY**

**JULIAN BENNETT,** Associate Professor. Ph.D., Archaeology, University of Newcastle upon Tyne, 1991. *Roman art and archaeology, Roman provinces and frontier studies, Archaeological drafting and surveying.*

**CHARLES GATES,** Senior Lecturer. Ph.D., Classical Archaeology, University of Pennsylvania, 1979. *Aegean Bronze Age, Greek art and archaeology, Byzantine art and archaeology.*

**MARIE-HENRIETTE GATES,** Associate Professor. Ph.D., Ancient Near Eastern Languages and Literatures, Yale University, 1976. *Archaeology of Mesopotamia, Archaeology of Syria-Palestine, Archaeology of Egypt, Archaeological method and theory.*

**N. İLGI GERÇEK,** Assistant Professor. Ph.D., Hittite and Mesopotamian Studies, University of Michigan, 2012. *History and languages of the Ancient Near East; Hittite history, language, and archaeology.*
Admission: Applicants are normally expected to have an undergraduate major in archaeology, art history, anthropology, or a related subject, and must demonstrate proficiency in English. Students from other disciplines are also eligible for the program, providing they strengthen their academic background by completing a year of preparatory courses prior to beginning the master's program. Students with an undergraduate degree in archaeology but insufficient English may complete one year in the Bilkent English preparatory program prior to beginning the M.A.

Applicants should take the ALES (Akademik Personnel ve Lisansüstü Eğitimî Girisî Sınavı/Academic Personnel and Postgraduate Education Entrance Examination) and must satisfy the announced minimum requirements. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of a foreign country may take the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of proficiency in English.

Degree Requirements: The M.A. program offered by the department focuses on the ancient and medieval archaeology of Anatolia. The program is designed to be completed in two years. Requirements consist of a minimum of 9 semester courses (27 credits) and a thesis (75–100 pages). In addition, reading proficiency in French or German must be demonstrated by test or by course. The required courses consist of two groups: (1) two core courses: Research Directions for Anatolian Archaeology and Art, and Issues in Archaeological Theory; (2) four seminars in at least two of the following divisions: pre-classical, classical, and medieval art and archaeology. Seminar topics vary from term to term depending on the research interests of the instructors. Students also take three electives. These can be additional seminars, courses in ancient or medieval languages, selected fourth-year undergraduate courses, or courses from other departments. Languages offered are Ancient Greek, Latin, Hittite, Classical Arabic, and Ottoman Turkish (the last two given in the History Department); in past years, Akkadian has also been taught.

**MASTER OF ARTS IN ARCHAEOLOGY**

**COURSE DESCRIPTIONS**

**HART 501 Issues in Archaeological Method and Theory**
This course will examine contemporary debates in archaeological methodology, analysis and interpretation. Emphasis will be placed on the techniques for applying theoretical models to fieldwork and analytical research.

**HART 507 Seminar: Pre-Classical Art and Archaeology**
Readings and discussion of key issues of Anatolian art and archaeology from the Prehistoric period to the Iron Age.

**HART 508 Issues in Pre-Classical Art and Archaeology**
Readings and discussion of key issues of Anatolian art and archaeology from the Prehistoric period to the Iron Age.

**HART 509 Seminar: Classical Art and Archaeology**
Readings and discussion of key issues of Anatolian art and archaeology from the Greek, Hellenistic and Roman periods.

**HART 510 Issues in Classical Art and Archaeology**
Readings and discussion of key issues of Anatolian art and archaeology from the Prehistoric period to the Iron Age.

**HART 519 Research Directions for Anatolian Archaeology and Art**
A team-taught introduction to research perspectives and sources, with one topic per week, on periods (Neolithic, Ancient Near East and Egypt, Iron Age Near East, Bronze Age Europe/Mediterranean, Greece, Rome, Byzantium, Islamic world) and themes (Science in Archaeology, Ancient Languages and Epigraphy, Ethnoarchaeology, Ceramics, and Artifactual Analysis).

**HART 523 Seminar: Medieval Art and Archaeology**
Readings and discussion of the key issues of Anatolian art and archaeology of the Byzantine, Islamic, Seljuk, and Ottoman periods.

**HART 551 Ancient Greek I**
**HART 552 Ancient Greek II**
Introduction to Ancient Greek for graduate students. All basic points of grammar will be covered, and students will be able to read simple texts by the end of the year.

**HART 553 Ancient Greek III**
**HART 554 Ancient Greek IV**
Selections from Greek literature and an introduction to epigraphy.

**HART 563 Latin I**
**HART 564 Latin II**
Introduction to Latin for graduate students. Basic points of grammar will be covered and reading skills developed.

**HART 583 Latin III**
**HART 584 Latin IV**
Selections from Latin literature, prose composition, and an introduction to epigraphy.

**HART 599 Master's Thesis**

**SAMPLE OF RECENT PUBLICATIONS**

- J. Bennett, *Towns in Roman Britain* (3rd revised edition), Shire Publications (2001)
Faculty Profile: 
Dr. Marie-Henriette Gates, 
Associate Professor, 
Department of Archaeology

Marie-Henriette Gates received a B.A. in archaeology and classical languages from Bryn Mawr College in 1970, and a Ph.D. in ancient Near Eastern languages and literatures, with a focus on the archaeology of the ancient Near East, from Yale University in 1976. She taught in the Department of Classics at the University of North Carolina at Chapel Hill before coming to Bilkent University as an associate professor in 1990.

This move followed upon many years of research and academic activity in Turkey: two years at the American Research Institute in Turkey’s Ankara branch (1976-78), and two decades of excavation experience in Turkey during summer field seasons, starting in 1969. During the same period, Dr. Gates also participated in excavations in Italy, Iran, and Syria.

Dr. Gates specializes in the Bronze Age cultures of the eastern Mediterranean and their interaction with ancient Anatolia, especially during the second millennium B.C. The excavations she has directed since 1992 at Kinet Höyük, an ancient maritime port north of İskenderun, have determined the focus of her recent publications, from yearly season reports in Kazı Sonuçları Toplantısı to articles on specific cultural and chronological aspects of the site. She also wrote “Archaeology in Turkey,” an annual summary and assessment of excavations, for the American Journal of Archaeology from 1994 to 1997, and again in 2007 with coauthor Bahadır Yıldırım.
The M.A. degree in philosophy is designed to develop an advanced understanding of philosophical problems, especially those in contemporary analytic philosophy and the history of philosophy. It provides students with an understanding of key philosophical debates and problems, and encourages them to develop and defend their own argumentative position. Coursework will often have an interdisciplinary character. Many courses will explore the impact of empirical and theoretical developments in other disciplines on contemporary philosophical debates.

**FACULTY**

**ISTVAN ARANYOSI**, Assistant Professor. Ph.D., Philosophy, Central European University, 2003. Philosophy of mind and of cognitive science, metaphysics.


**YEHEZKEL S. BERKOVSKI**, Assistant Professor. Ph.D., Philosophy, Oxford University, 2005. Philosophy of science, metaphysics, ethics.

**NAZIM KEVEN**, Assistant Professor. Ph.D., Washington University in St. Louis, Philosophy-Neuroscience-Psychology Program, 2016. Philosophy of cognitive science, neurophilosophy, moral psychology.

**DAVID MARK KOVACS**, Assistant Professor. Ph.D., Philosophy, Cornell University, 2016. Metaphysics, philosophy of mind, epistemology.


**LARS ROLAND VINX**, Assistant Professor. Ph.D., Philosophy, University of Toronto, 2006. Legal philosophy, political philosophy, constitutional theory, history of political thought.

**SIMON WIGLEY**, Associate Professor and Department Chair. Ph.D., Political Philosophy, London School of Economics and Political Science, 1998. Social and political philosophy, ethics.


**MASTER OF ARTS IN PHILOSOPHY**

**Admission:** Applicants from all disciplines are encouraged to apply. Applicants from international students are also welcomed. Those without an undergraduate major or minor in philosophy may be required to take preparatory undergraduate courses in philosophy before they commence the M.A. program. Evaluation of applicants is based on their ALES (Akademik Personel ve Lisansüstü Eğitimi Girisi Snav'ı/Academic Personnel and Postgraduate Education Entrance Examination) scores, past academic records, references letters, a written exam, and an interview. Applicants who are not Turkish citizens, or who are Turkish citizens residing abroad, may take the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of proficiency in English.

**Degree Requirements:** The program requires students to complete a minimum of 24 units of course work (a total of at least 11 courses). By the end of the second year the student will complete and defend a master’s thesis based on original research. The standard duration of study for the M.A. in Philosophy is two years (including summers).

**COURSE DESCRIPTIONS**

**PHIL 501 Research Preparation in Philosophy I**
This course is based around the close reading of classic texts in analytic philosophy with an emphasis on epistemology, metaphysics, and logic. The course work will develop the ability to identify and assess informal and formal arguments and to write and present in a lucid and persuasive manner. Particular emphasis will be placed on research methodology of theoretical philosophy, such as assessing validity and logical consequence, inference to the best explanation, theories of reference and meaning, and explanation.

**PHIL 502 Research Preparation in Philosophy II**
Close reading of classic texts in analytic philosophy with an emphasis on ethics, political philosophy, and aesthetics. Ability to identify and assess informal and formal arguments, make key distinctions, and write and present in a lucid and persuasive manner. Research methodology of practical philosophy, such as identifying and distinguishing normative from non-normative explanations, how to apply theoretical work in ethics to actual ethical situations, and the functional role of evaluative judgment.

**PHIL 504 Philosophy of Cognitive Science**
Focusing on a selection of key texts, core topics in contemporary philosophy of cognitive science, such as: memory, theory of mind, modularity, innateness and empiricism, neuroethics, animal cognition, consciousness.
PHIL 521 History of Political and Educational Philosophy
The course introduces students to philosophical thinking about the relationship between human nature, society and education. It focuses on the study of key texts in the history of philosophy and educational thought including Aristophanes, Plato, Descartes, Voltaire, Mill and Russell. There is strong emphasis on the development of students’ critical reasoning skills. Students are encouraged to think about the implications of the views discussed for their own pedagogical practice.

PHIL 531 Metaphysics
Focusing on a selection of key texts, this course examines core topics in contemporary metaphysics, such as: truth, existence, universals and particulars, causality, modality, perception, knowledge, the a priori, identity, anomalous monism, supervenience, vagueness, and time.

PHIL 532 Aesthetics
Key debates in the philosophy of art, such as the definition of art, the ontology of artworks, the nature and scope of the aesthetic, expression, representation, interpretation, appreciation, aesthetic value and the value of art, creativity, art and ethics.

PHIL 591 Thesis Seminar
PHIL 599 M.A. Dissertation
SAMPLE OF RECENT PUBLICATIONS


- S. Berges, “The hardboiled detective as moralist: ethics in crime fiction”, *Values and Virtues: Aristotelianism in contemporary ethics*, T. Chappell (Eds.), Oxford University Press (Forthcoming)

- S. Berkovski, “A naturalist view of humiliation”, *Phenomenology and Mind* (Forthcoming)


- D.M. Kovacs, “Grounding and the argument from explanatoriness”, *Philosophical Studies* (Forthcoming)


- W.B. Wringe, “Rethinking expressive theories of punishment: why denunciation is a better bet than communication or pure expression”, *Philosophical Studies* (Forthcoming)

- W.B. Wringe, “Punishment, Forgiveness and Reconciliation”, *Phiosophia* (Forthcoming)


Faculty Profile:
Dr. Sandrine Bergès,
Associate Professor,
Department of Philosophy

Sandrine Bergès studied philosophy at King’s College London and Birkbeck College before moving to the University of Leeds, where she obtained a Ph.D. in 2000. Before coming to Bilkent she taught part time in London, Leeds, and St. Andrews.

Dr. Bergès works on the history of moral and political philosophy—ancient (Plato, Aristotle, the Stoics), medieval (Heloise, Christine de Pizan), early modern (Cavendish), and eighteenth century (Wollstonecraft, Sophie de Grouchy, Marie-Jeanne Roland, Olympe de Gouges)—as well as on contemporary social and political philosophy, with an emphasis on the capability approach and feminism.

An active member of Project Vox and the New Narratives Project international groups striving to reintroduce important texts by women philosophers into teaching and research, Dr. Bergès is also a cofounder of the Turkish–European Network for the Study of Women Philosophers and of SWIP-TR. Her publications include Wollstonecraft’s A Vindication of the Rights of Women (Routledge), A Feminist Perspective on Virtue Ethics (Palgrave Macmillan), and Plato on Virtue and the Laws (Continuum); she is coeditor of The Social and Political Philosophy of Mary Wollstonecraft (Oxford University Press). In addition, she has published a number of articles in journals such as The Monist, the Journal of Applied Philosophy, Utilitas, the British Journal for the History of Philosophy, Hypatia, and Ethical Theory and Moral Practice.

Faculty Profile:
Dr. Simon Wigley,
Associate Professor,
Department of Philosophy

Simon Wigley studied philosophy, politics and economics at Otago University in New Zealand. After completing his masters and doctoral studies at the London School of Economics and Political Science, he started working in the Department of Political Science at Bilkent University. In 2003 he moved to the newly created Department of Philosophy at Bilkent, where he became chair in 2015.

Dr. Wigley’s research interests range from theoretical work in normative political philosophy to empirical work in comparative politics. He is currently working on a long-term project on the impact of political institutions on population health, which has an important bearing on the question of whether democracy can be justified because of the outcomes that it produces. Further research areas include the arguments for and against parliamentary immunity, the capabilities approach and education, and the apparent incompatibility between automatic unconscious behavior and moral responsibility. His work has been published in a number of journals, including World Politics, Public Choice, Social Indicators Research, Human Rights Quarterly, Philosophical Psychology, Law and Philosophy, the Journal of Value Inquiry, Politics, Philosophy & Economics, and the Journal of Political Philosophy.

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The Department of Turkish Literature encourages free and creative thinking, emphasizing research, analysis, interpretation, and criticism. Aiming at enhancing the standards of Turkish literary studies and universalizing the field, the department encourages proficiency in several languages and fortifies theoretical, interdisciplinary, and comparative approaches.

The graduate programs are designed to encompass all periods and genres of oral and written Turkish literature. Present fields of concentration are: Ottoman Literature, 19th-Century Literature and 20th and 21st-Century Literature.

FACULTY

ETIENNE CHARRIERE, Assistant Professor. PhD, University of Michigan, 2016. Late Ottoman and Modern Turkish Literature, Minority Literatures in the Ottoman Empire and Republican Turkey, Novel Studies, Translation Studies, Literary Theory.

MEHMET KALPAKLI, Associate Professor and Acting Department Chair. Ph.D., University of Washington/İstanbul University, 1992. Ottoman literature and cultural history, Near Eastern languages and literature, modern Turkish literature, theory of literature, digital humanities.

ZEYNEP SEVİNER, Assistant Professor. Ph. D., University of Washington, 2015. Modern Ottoman and Turkish Literatures, technology and cultural production, translation theory.


MASTER OF ARTS IN TURKISH LITERATURE

The duration of the M.A. program is three years, including a preparatory year during which students take courses designed to introduce various aspects of literature and strengthen proficiency in Ottoman Turkish and foreign languages.

Admission: Applicants must be graduates of four-year undergraduate programs, preferably in literature. Applications will be evaluated on the basis of the applicant’s scholarly record, ALES (Akademik Personel ve Lisansüstü Eğitimİ Giriş Sınavı/Academic Personnel and Postgraduate Education Entrance Exam) or GRE (Graduate Record Examination) scores, level of proficiency in English (TOEFL iBT 87) and in Turkish, a composition designed to assess his/her ability to make a critical analysis of literary texts, and an interview.

Degree Requirements: Candidates for the M.A. degree are required to complete at least 21 units of credit beyond the preparatory year and to prove their competence in Turkish, Ottoman, and English. Some students may be exempted from taking courses in Ottoman depending on their proficiency levels. The candidates may be required to learn additional languages according to their fields of concentration: Persian and/or Arabic for Ottoman Literature; French and/or German for 19th-Century Literature and 20th-Century Literature. Candidates must prepare and defend a master’s thesis. They must maintain a minimum GPA of 3.00 throughout their studies. Language courses and thesis writing are noncredit requirements. Candidates must demonstrate their proficiency in English.

DOCTOR OF PHILOSOPHY IN TURKISH LITERATURE

Admission: Applicants are required to hold an M.A. degree in Turkish literature or a related field. Applicants should take the ALES (Akademik Personel ve Lisansüstü Eğitimİ Giriş Sınavı/Academic Personnel and Postgraduate Education Entrance Examination) or GRE (Graduate Record Examination), and must satisfy the announced minimum requirements. To be admitted to the program, applicants from other universities may be required to take written and/or oral exams. The duration of the doctoral program is at maximum six years.

Degree Requirements: Doctoral students must complete course work of at least 21 credit hours with a minimum GPA of 3.00 and fulfill all language requirements before they present their written dissertation proposals and take comprehensive written and oral exams. The research proposal for the dissertation must be approved by the department before the candidate takes the comprehensive exams. These exams are designed to evaluate the candidate’s expertise in his/her area of concentration and the research proposal for the dissertation. The candidate is eligible to take the orals after passing the written exam. Following the successful completion of these requirements, the candidate conducts research and proceeds with writing the dissertation, which must be based on original research and make a substantial contribution to Turkish literary scholarship. Candidates must successfully defend their dissertations before a committee of the faculty. Bilkent University will award successful doctoral candidates the degree of Doctor of Philosophy in Turkish Literature.
EDEB 401 Introduction to Turkish Literature I
Designed to give the student an overview of Turkish literature, the course will deal with the earliest poems, the Orkhon Inscriptions, major early works (Divan-i Lügat-i Türk, Kutadgu Bilig, Dede Korkut, etc.), highlights of Seljuk literature (especially Yunus Emre), and the most important works of Divan poetry and prose (from the 14th century to the mid-19th century).

EDEB 402 Introduction to Turkish Literature II
This course will provide an overview of Turkish literature from the Tanzimat era to the present. Emphasis will be on the development of such literary genres as the novel, short story, drama, poetry, essay, and criticism in the modern era. The ethical and aesthetic arguments of major literary movements, key literary debates, and the social impact of literature will be discussed and evaluated. Readings will include major works in various genres.

EDEB 403 Theories of Literature
This course will provide a wide-ranging theoretical background for the practice of literary criticism. A general survey of western literary history, literary movements, genres, and key terms, will be followed by the examination of modern literary/critical theories, including formalist, structuralist, post-structuralist, Marxist, feminist, and psychoanalytical approaches. Readings (in Turkish) will include selections from Aristotle, Barthes, Benjamin, Brecht, Eagleton, Escarpit, Freud, Genette, Jameson, Lukacs, Ong, and Todorov. Students will write reading reports, make a presentation, and write a term paper on a selected topic.

EDEB 405 Written Expression
This course aims at enhancing the appreciation and control of written Turkish at a high level. It will equip the students with the fundamental skills of writing and editing. After a review of the basic elements of composition (thesis, organization, style, tone), the techniques of narration (summary, paraphrase, quotation), the rules of punctuation, citation, etc., numerous examples of printed works will be discussed in class. Regular writing and rewriting assignments will be given. Emphasis will be on non-fictional prose, including scholarly and critical writing.

EDEB 411 Ottoman Turkish I
This course will introduce students to the Ottoman script and teach them the fundamentals of Ottoman-Turkish grammar through readings and written exercises.

EDEB 412 Ottoman Turkish II
This course will enhance the students’ comprehension of the Ottoman script and the fundamentals of Ottoman-Turkish grammar through readings and written exercises.

EDEB 413 Theoretical History of Western Civilization
In this course, western civilization, from preliterate societies to modern times, will be examined theoretically. Political, economic, religious, technological and artistic transformations on various levels are to be dealt with from different theoretical points of view. Ancient Greek and Roman contributions with respect to philosophy and law are also on the agenda of this course. Historical backgrounds of Humanism, Renaissance, Scientific Revolution, Reformation, Enlightenment and Romanticism are, inter alia, part of the basic problematic to be discussed. Furthermore, numerous important questions will be raised, among them: ‘Are primitive/civilized differences tenable?’; ‘On what basis can there be periodization of human history?’; and ‘How the human mind passes from myth to Logos?’

EDEB 414 Introduction to Folk Literature
This course will offer historical survey of the major genres of Turkish folk literature including poetry, folktale, the epic, and folk humor. Students will also be introduced to significant scholarly works in the field.

EDEB 416 Criticism
This course aims at furnishing the students with a critical understanding of the development of the history and practice of literary criticism in Turkey since the Ottoman period. Readings will include selections from the works of such writers as Ataç, Namık Kemal, Moran, Parla, Sinasi, A. Şuayip, Tanpinar, Uşakligil, and Ziya Paşa. Assignments will include regular reading reports, a class presentation, and a term paper.

EDEB 419 The Turkish Short Story
The origins of the contemporary short story in Turkish literature may be found in Aziz Efendi’s Muhayyelât, a late 18th-century work, which is considered a bridge between the story-telling tradition in the East and the modern short story. In this course, the development of the modern Turkish short story will be examined in historical context, especially with regard to its generic transformation, and in terms of comparisons of style and content among various works by modern authors.

EDEB 424 Introduction to Divan Literature
Taking off from the question, ‘What kind of literature is Divan literature?’ this course aims to introduce the aesthetic structure and understanding of divan literature, regarding both form and content, and to see how they are different from those of today. Our primary topic is poetry: we examine Aruz metrics, the rules of rhyme, and verse forms; we also discuss figures of speech and subtleties of expression.

EDEB 434 Introduction to Divan Literature II
Ottoman literature endured for 600 years. Its classical epoch ended in the 16th century and its transformation began in the 17th century. This transformation and reorientation period lasted into the 18th century and ended with westernization in the 19th century. In this course we shall examine and discuss the lyric poetry, mesnevis and prose works.

EDEB 503 Ottoman Divan Literature
This course will cover the most important genres of Ottoman Divan literature including poetry (gazel, kaside, mesnevi) and prose (tezkires, chronicles, risales). It will prepare the students for a broader critical understanding of Ottoman literature.

EDEB 504 Turkish Folk Literature
This course will concentrate on diverse types of Turkish oral literature, folk poems and tales, epics and narratives, anecdotes and satirical pieces, riddles and lyrics from Anatolia.

EDEB 505 Turkish Literature, 1839-1922
This course will examine the major developments in Turkish literature from the Tanzimat era to the founding of the Republic. Emphasis will be on the inception and transformation of various literary genres including the novel, the essay, poetry, drama, and criticism. The conflict between tradition and modernity, debates concerning literariness and the place of literature within society, and the social impact of the literature of the period will be among the key areas of investigation. Readings will consist of the major works of significant writers and poets, as well as secondary literature, including A. H. Tanpinar’s XIX. Asır Türk Edebiyatı Tarihi.

EDEB 507 Turkish Poetry
Following a brief overview of the process of change in Turkish poetry from Tanzimat (reforms period) until the Republic, this course will survey and discuss movements, changing ideological and aesthetic approaches, the correlation between modern poetry and Republican enlightenment from 1923 until the present day. It will also make a critical analysis of modern poetry in conjunction with literary theories.
EDEB 508: Text and the City: Urban Space and Architecture in Turkish Literature
A survey of the relationship between the literary text and urban space in late Ottoman Empire and Turkish Republic. As two cultural products in process of change in this period, their parallel structural transformation, and details on urban spaces and architectural artifacts in the fictional texts of the time. Keeping these parallelisms in mind, new ways of reading space in these texts, thus establishing an interdisciplinary approach toward the study of Turkish literature and introducing new methods such as geocriticism and digital humanities.

EDEB 511 Ottoman Turkish III
This course will enhance students’ comprehension of Ottoman texts from all periods and genres.

EDEB 512 Ottoman Turkish IV
This course aims at furnishing students with an understanding of difficult Ottoman texts.

EDEB 514 Seminar on Divan Literature
History of Ottoman literature from the 17th to the end of the 19th century. This seminar will deal with Ottoman Divan Poetry, especially gazel, kaside, mesnevi and prose (tezkires, chronicles, rısałe). It aims to give the students a wide perspective and critical understanding of major aspects of Ottoman Literature.

EDEB 518 Poetry and Translation
The aim of this course will be to show how our total understanding of a poem is influenced by the language it is written in and how our perception changes not only as we translate, but afterwards when we review the translated text. We will also analyze how imagery can shift with language and how the sounds of another language influence our perception of the poem. We shall also be reviewing translation techniques as well as comparing our translations to existing translations and criticizing these and our own translations in terms of accuracy, imagery and sound and if whether the general mood of the translation reflects the original. It must be remembered that no two impressions of a work of art will be the same. Therefore every person’s translation is bound to be different. After all “interpretation” is a synonym for translation. However, in translating literature, as well as anything else, there are limits to interpretation, which are imposed by the original text. We shall endeavor to learn how to keep within these limits. The general focus will be on two writers: Thomas Hardy and T.S. Eliot. The former as both poet and novelist, the latter as poet and essayist.

EDEB 524 The Turkish Novel
This course will examine the transformation of the social, psychological and aesthetic parameters of the Turkish novel from its inception in the latter part of the 19th century to its most recent examples. Areas of interest will include: the relationship of the early novels with traditional narratives; the questions concerning the social representativeness of novels, the formal changes in the tradition of novel, writing, and critical responses to key novels. Readings will include major samples of such subtypes of the Turkish novel, as the historical novel, philosophical novel, village novel, nature novel, and modernist novel as well as several critical books and essays.

EDEB 526 Divan Literature Through Texts
In this course several sample texts of Ottoman Divan literature, including those in the forms of minaşara, sakınname, şahrengiz, dibace, and tezkire, will be read and discussed. Emphasis will be on comprehending the special vocabulary of these texts and the unique way of thinking they express.

EDEB 530 Literary Translation
Organized essentially as a workshop, this course will familiarize students with techniques of translating Turkish literary texts into English. It is designed for students with proven proficiency in English. Texts will include verse and prose from most periods of Turkish literary history - certainly Divan, folk, Tanzimat and modern literature. Selections may vary depending upon individual needs related to field of specialization and/or thesis topic. This course will train students in literal translation as well as in doing creative - and hopefully publishable - versions.

EDEB 593 Seminar
This course is designed to guide the Master’s students in their thesis work. Research methods, literature review, elaboration of topics, and organization of material will be discussed in periodic meetings. Presentation in departmental seminars may be requested.

EDEB 606 Sufi Seminar
In this seminar Islamic mysticism, orthodox as well as heterodox, will be discussed with special reference to Sufi poetry and its history. Especially the question that, in the absence of systematic philosophical tradition, can mysticism work in loco parentis as a systematic world-view will be dealt with. Other topics like the relation of Sufism to Islamic theology, the problematic of a special Turkish mysticism, and the theoretical basis of Sufi symbolism will also be on the agenda.

EDEB 607 Modernism in Turkish Literature
This course will deal mainly with the repercussions of political and social aspects of Modernism qua Westernization in Ottoman and Republican Turkish Literature. But, Modernism as a transformation of literature itself, especially in the field of poetry, will also be critically investigated.

EDEB 608 Critical Approaches to Turkish Literature
This course is designed to reevaluate modern Turkish (Republican) literature from a theoretical point of view. Theories such as Marxism and Psychoanalysis (Freudian and Lacanian), and philosophical currents (Phenomenology and Existentialism, among others) will be brought to bear upon related texts to produce new critical understanding.

EDEB 619 World Fiction
The seminar will critically survey and discuss several major 20th-Century novels and many modern short stories translated into Turkish. It will examine the cultural contexts of the novels and short stories, the way they reflect their times and respective societies, their fictional techniques, aesthetic and ethical concerns, and influences (if any) on Turkish fiction. Relevant theories will also be analyzed.

EDEB 621 Seminar on the Mesnevi in Divan Literature
This seminar provides a historical perspective on the Mesnevi genre from the thirteenth century onward, and examines how it ceded place to the novel and short story as Turkish literature opened to the West in the nineteenth century. We take a topical approach, and discuss the origin of the Mesnevi genre and the way in which it assumed a Turkish (or Anatolian) dress. We also read selected mesnevis, examining such features as structure, plot, authors’ apologies, character, folk-tale elements, societal value judgments, and local elements; and compare these with the technique and understanding of the Western novel.

SAMPLE OF RECENT PUBLICATIONS

Faculty Profile:
Dr. Mehmet Kalpakli,
Associate Professor,
Department of Turkish Literature

Mehmet Kalpakli is acting chair of the Department of Turkish Literature and acting chair of the Department of History. He received his Ph.D. from the University of Washington-Istanbul University joint program in 1992. He specializes in Ottoman literature, cultural history of the Ottoman Empire, cultural heritage, and digital humanities. He is co-founder of and an active participant in the Ottoman Text Editing Project at the University of Washington and Bilkent University. Some of his publications are: The Age of Beloveds: Love and the Beloved in Early-Modern Ottoman Turkish and European Literature, Culture, and Society (with Walter G. Andrews), Duke University Press, 2005; Ottoman Lyric Poetry: An Anthology (with Walter Andrews and Najaat Black), University of Texas Press, 1997, and an expanded edition, University of Washington Press, 2006; Osmanlı Divan Şiiri Üzerine Metinler (Texts on Ottoman Divan Poetry), Yapı Kredi Press, 1999; and The Complete Works of Halide Edib Adıvar (18 volumes), Ozgür Press/Can Press, 1996-2011. He wrote the script for a documentary on the life of Fatih Sultan Mehmed as a "Renaissance Emperor" that was shown on TRT (Turkish National Television), and released as a DVD in 2013. Dr. Kalpakli served as the Executive Board Member of the UNESCO Turkish National Commission between 2006-2014.

Contact:
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• P.Duygulu, D.Arifoglu, M. Kalpakli, “Cross-document word matching for segmentation and retrieval of Ottoman divans”, Pattern Analysis and Applications (Forthcoming)


The graduate program in Conference Interpreting is multilingual (Turkish-English-French) and does not require the writing of a thesis. As a joint project undertaken by the European Commission, the European Parliament, and Bilkent University, the program has two major objectives. The first is to provide students with the skills they need to work as conference interpreters, in view of the growing need for multilingual interpreters in this area. This is especially relevant in view of Turkey’s possible future EU membership and increasing relations with EU countries.

The second aim of the program is to augment the level of professionalism in this field. Familiarizing students with the theories, tools, and methodology of the field, as well as with contemporary issues, the EU, and other international institutions is an important part of the program. It has been designed in accordance with the norms of the EU institutions supporting the program and AIIC norms. The candidates are instructed at Bilkent University by professional accredited conference interpreters working for EU institutions, visiting professional conference interpreters from EU institutions, field experts, and language experts in professional conference interpreting premises designed for training purposes.

Admission: Applicants are required to have a bachelor’s degree. The program recruits candidates who hold university degrees in a wide range of subjects, including not only interpreting and translation but also such fields as law, business administration, international relations, economics, medicine, and engineering. The candidates must be competent in Turkish, English, and French. In addition to the general requirements set forth by the university, admittance to the graduate program is determined by the results of a three-stage entrance examination, including language aptitude tests, general knowledge and written translation exams, and an interpreting aptitude test, followed by an interview. Each stage of the admission examination is eliminatory, and those candidates who make it to the final stage appear before a jury of professional interpreters to demonstrate their interpreting skills.

Degree Requirements: After the completion of three semesters of course work spanning approximately 10 months, the candidates must attain a satisfactory grade in the Interpreting Practice course, which has a single, final examination. This final test reflects practical, real-life conference situations and is graded as either satisfactory or unsatisfactory. A team of professional interpreters, native speakers of the students’ A, B, and C languages, and other professionals as deemed appropriate are able to follow the final examination and consult with the instructors about the status (satisfactory/unsatisfactory) of the student. Any students failing to successfully complete this final exam/aptitude test will not be awarded the degree.
COURSE DESCRIPTIONS

CINT 501 Theory of Interpretation
Students will be acquainted with the theoretical aspects of interpretation and will be familiarizing themselves with the research findings that have a bearing on interpretation like cognitive, psycholinguistic, neurolinguistic, sociolinguistic paradigms and communication and discourse studies.

CINT 503 Introduction to the Practice of Interpreting
This course aims to familiarize students with some basic communication skills, conference preparation techniques, professional ethics, conference procedures, working practices and conditions. They will learn about how they may attain the necessary skills to become effective communicators, how to keep up to date with world affairs in the various areas in which they work, how to improve their intuition and flexibility and develop their diplomatic skills.

CINT 506 EU and International Institutions
Students are familiarized with basic legal and economic notions and especially focus on understanding how EU institutions and international organizations operate to develop a know-how of institutional processes and procedures. They become familiar with specific terminology, registers, styles and discourses used in communication in the relevant settings.

CINT 509 Advanced Consecutive Interpretation I
In this first course on consecutive interpretation preliminary exercises in content analysis, memory exercises, summarization, sight translation and note-taking techniques will be studied. Students are prepared to be able to deliver fluent and effective consecutive interpretations of speeches into the mother tongue. Students are trained with authentic conference materials in which they will confront a diversity of subject areas, styles and registers. The length, information density and degree of technicality and specificity of the speeches will increase throughout the course.

CINT 510 Advanced Consecutive Interpretation II
Through a variety of advanced level exercises and speeches in which the information density and degree of technicality and specificity increases as the course progresses, students are trained to deliver fluent and effective consecutive interpretations into the target language, accurately reproducing the content of the original, using appropriate terminology and register.

CINT 513 Advanced Simultaneous Interpretation I
Students will be building on skills such as effective communication, content analysis, fluency of speech, memory exercises. Students will be acquainted with booth techniques and team interaction while acquiring the professional skill to interpret into the mother tongue from both active and passive foreign languages in actual conference settings and/or simulations in the booths. This is undertaken in order to enable them to reproduce the content of the original, using the appropriate terminology and register. The length, information density and degree of technicality and specificity of the speeches will increase throughout the course. Once they have mastered simultaneous interpreting skills, students will also be taught to interpret with the texts in front of them.

CINT 514 Advanced Simultaneous Interpretation II
Students will be trained to provide fluent and effective simultaneous interpretation of speeches into the target language undertaking advanced practice of simultaneous interpreting in the working languages in booths. Students will be attending conferences on diverse topics and they will analyze and criticize actual interpreting performance vis-à-vis actual conference situations. Through laboratory simulations and other opportunities they will be acquainted with the interpretation of diverse topics while undertaking research in relevant settings and terminology.

CINT 516 Conference Interpreting I
Students will be trained in the main types of work for conference interpreters. They will be acquainted with the types of interpreting necessary for committees and conferences, discussions between Heads of State, Prime Ministers, Ministers, business meetings and trade negotiations and court cases, working lunches, field trips, working on the ability to rapidly shift between mother tongue and the active language and from the passive language to the mother tongue.

CINT 518 Cross Cultural Negotiations
The aim of this course is to introduce students to the complexities of cross cultural negotiation and conflict resolution. Through simulations and case studies students will be encouraged to assess the effect of cultural influences on negotiation strategies, argumentation and persuasion tactics. Students will also be involved in a range of activities such as discussions, negotiations and debates that will further enhance their communicative skills in their active and passive foreign languages.

CINT 520 Technology and Research for Interpreting
This course aims to allow the student to familiarize with the technologies used in the interpretation milieu. They will be asked to research new virtual meeting technologies, use of multilingual communication in the media, multilingual chats, on-line communication on the Internet and new practices that may have relevance for their fields. Students will be acquainted with up-to date research techniques such as the use of terminology management systems in line with recent developments. They will also be made aware of interpreting practices for TV and radio interviews, and videoconferences.

CINT 590 Interpreting Seminar
This course aims to allow students to practice the skills they attained throughout the two semesters in actual conferences and simulated conferences with the help of an advisor. The course has a single final examination that will reflect practical, real-life conference situations and will be graded as either satisfactory or unsatisfactory. A team of professional interpreters, native speakers of the students A, B, C languages and other professionals deemed necessary will be able to follow the final examination and consult with the advisor about the status (satisfactory/unsatisfactory) of the student.

SAMPLE OF RECENT PUBLICATIONS

• A.S. Okuyuz, “Contribution of Translations and Adaptations to the Birth of Turkish Pop Music”, Asian J of Humanities and Social Sciences, 4 (2016)


Faculty Profile: Dr. Şirin Okyayuz, Assistant Professor, Department of Translation and Interpreting

Şirin Okyayuz completed an M.A. in Translation and Interpreting with research into norms in media translation, and a Ph.D. degree in linguistics at Hacettepe University with a dissertation about the “interpretive” factor in the translation of literature. Dr. Okyayuz, previously a European Commission Marie Curie Scholar, joined the Bilkent University School of Applied Languages in 2001. She has translated books about philosophy, Turkish politics, and history, as well as numerous historical novels, bestsellers, thrillers, and works of fantasy and children’s literature and “chick lit.” She was awarded a Readers’ Prize for contributions to the field in 2003.

She has worked as an editor for publishing houses in Turkey, translated for the Ministry of Culture, and translated plays staged by the Turkish State Theatre. She is also the coauthor of several plays. Dr. Okyayuz is a member of the editorial boards of various scholarly journals, a co-compiler of several dictionaries, and the coauthor of a dictionary on translation terminology. She has also taken and taught courses on the use of technology in translation and translator training. Her various articles in national and international citation indexed journals such as META deal with audiovisual translation, literary translation, translation in politics, technical translation, and database compilation for translation dictionaries. She has served as the Turkish delegate to the Turkish Interpreters Associations at FIT, UNESCO.

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The Department of Communication and Design offers a Master of Arts in Media and Visual Studies and a Master of Fine Arts in Media and Design. The M.F.A. program is a joint program organized in collaboration with the Department of Graphic Design. The Department also offers a dual master's program with Tilburg University in the Netherlands, which is geared toward topics of contemporary interest.

**FACULTY**

**YUSUF AKÇURA**, Cinematographer in Residence. B.A., French Language and Literature, Faculty of Letter, Dept. of Western Languages and Literatures, Ankara University, 1985. Documentary and Cinematography.

**EMEL ÖZDORA AKŞAK**, Assistant Professor. Ph.D., Mass Communication, College of Journalism and Communication, University of Florida, 2009. Organizational communication, public relations, advertising, corporate social responsibility.


**AHMET GÜRATA**, Assistant Professor and Department Chair. Ph.D., Cultural Studies and Humanities, University of London, 2003. Film theory and history, documentary.


**KAĞAN OLGUNTÜRK**, Assistant Professor of Practice. Proficiency in Art, Marmara University, 2004. Film directing and visual techniques.


**ANDREAS TRESKE**, Visiting Assistant Professor, M.A., Film Directing, Hochschule für Fernsehen und Film, Munich, 1992. Video production, new media.


**MASTER OF ARTS IN MEDIA AND VISUAL STUDIES**

The M.A. program prepares students for careers in the media and communications sector as well as in academia. It provides students with a sophisticated conceptual framework and analytical skills, enabling them to make original contributions to media, visual, and cultural studies by specializing in a particular aspect of media such as film, television, the Internet, or print media. The program encourages free and creative thinking, as well as theoretical, interdisciplinary, and comparative approaches; it emphasizes research, analysis, interpretation, and criticism.

**Admission:** Applicants are required to have a bachelor’s degree in a relevant field of design. They should take the ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı/Academic Personnel and Postgraduate Education Entrance Examination) and must satisfy the announced minimum requirements. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of a foreign country may take the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of proficiency in English. Admittance to the graduate program is also determined by the result of an entrance examination that includes a portfolio presentation and an interview. The date and place of the examination are announced each year by the university. During the interview, applicants should present a body of well-defined original work as well as slides, videotapes, or photographs of previous work.

**Degree Requirements:** After the completion of at least 24 units of course work in two successive terms, candidates must take two seminar courses in their area of interest and prepare and submit a thesis. The maximum duration of the program is five semesters.
The M.F.A. program prepares students primarily for careers in the media and graphic design sectors, and secondarily for positions in academia. Integrating practical, theoretical, interdisciplinary, and comparative approaches, the program provides students with a sophisticated theoretical and practical framework to enable them to make original contributions to both Turkish and international media and design production. The program encourages free and creative thinking, emphasizing research, analysis, interpretation, practice, and constructive criticism.

Admission: Applicants are required to have a bachelor’s degree. Applicants should take the ALES (Akademik Personel ve Lisansüstü Eğitimi Girişi Sınavı/Academic Personnel and Postgraduate Education Entrance Examination) and must satisfy the announced minimum requirements. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of a foreign country may take the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of proficiency in English. Admittance to the program is also determined by the results of an interview and the evaluation of a portfolio consisting of previously prepared media and design works (fiction writing, drawings, illustrations, graphic designs, scripts, storyboards, slides, photographs, web designs, animation projects, and/or videos). The date and place of the interviews are announced each year by the University.

Degree Requirements: After the completion of at least 24 units of course work in two successive terms, the candidates must take two research seminars in their area of interest and prepare and submit a media and design thesis project that includes a written component. The duration of the program is four semesters.

COURSE DESCRIPTIONS

COMD 511 Theory and Method in Media Visual and Cultural Studies
An overview of the fundamental research methods in media, visual, and cultural studies. Research methods include effect studies, media ethnography, content analysis, and other ways of studying media through close examination of its texts, institutions, audiences, and subcultures.

COMD 513 Film and Genre
This course aims to investigate the key terms of film theory such as narrative, mise-en-scène, subjectivity, the gaze, the voice, spectatorship, sexual difference, suture and so forth in relation to the question of “genre.” Selections from various film genres will be examined.

COMD 514 Identity, Space and Image
This course will introduce students to debates on “identity” and “subjectivity” in contemporary visual and cultural studies. Drawing upon various theoretical and methodological sources, the course places the emphasis on how identity and subjectivity can be conceived in relation to the concepts of space, memory, belonging, hybridity and migrancy in contemporary global culture.

COMD 515 Media Reception
Drawing upon different theoretical and methodological approaches to the study of media reception, this course explores the relationship between media texts and their audiences. A variety of media and media genres including films, TV serials, comics and popular literature are discussed together with topics such as media effects, active audience theory, ethnography, fandom, gender, nation, and ethnicity.

COMD 516 Turkish Cinema and Modernity
This course aims to discuss Turkish cinema in relation to the question of “modernity.” Making a critical analysis of the historical development of Turkish cinema in the context of Turkey’s experience of modernity, the course will investigate the debates around “Yeşilçam cinema,” “national cinema,” “social realism,” “third world cinema,” “women’s films,” “art cinema,” and “the new Turkish cinema.”

COMD 517 Topics in Media Studies
This course gives the students the opportunity to critically engage with a specialized and an advanced field of study within Media Studies. The topics, readings, and projects of the course to be determined by the instructor for any given term.

COMD 521 Body, Movement and Vision in Immersive and Interactive Media I
This course examines the role of body, movement and vision in art and traditional and digital media including literature, cinema, computer and video games, multimedia and online systems and the Internet. Topics covered include: historical development of digital art and culture; cybernetics and systems theory; digital avant-garde; concepts of virtual and virtuality; theories of immersive and interaction in literature, visual and digital media; perception, attention and memory; conscious and unconscious information processing; design of interactive and immersive systems and user interfaces; computer vision; aesthetics of digital media, information and interactive arts.

COMD 522 Body, Movement and Vision in Immersive and Interactive Media II
This course extends and applies the ideas studied in “Body, Movement and Vision in Immersive and Interactive Media I” to a wide range of contemporary art works that use computer and other forms of high technology. The focus is on critical examination and evaluation of artworks that have been created in the past ten years, however, earlier computer aided artworks are also studied. The course explores the ways in which art, science and technology are converging in the twenty-first century and how they might be integrated in the future. Emerging patterns of integration between art and various scientific disciplines and technologies are studied, but particular emphasis is put on the role of computers in visual arts. Concepts, methods and terminology derived from critical and media theory, philosophy, science and engineering are introduced to analyze emerging forms of “Hi-Tech” or “Information Art”.

COMD 523 Media and Everyday Life
There is a growing emphasis on practices and strategies of everyday life in the study of contemporary societies, identities and political movements. Media has become an integral part of our everyday lives, as the modern everyday is increasingly mediated by television, Internet, visual images, films, advertisements, newspapers, and so on. This course addresses the leading theoretical debates on everyday life and examines entanglements of ordinary people and various media from an anthropological perspective. Drawing on ethnographically informed, historically grounded and context-specific case studies, this course aims to explore how people use and make sense of media texts and communication technologies in their everyday lives. A particular focus of this course is the role of media in aesthetics and politics of the everyday.

COMD 531 Science and Media
The Science and the Media course will introduce students to the history and current state of science reporting in various media and their specific journalistic forms. Students will also get to know different methodological alternatives for studying trends in science reporting as well as increase their abilities in media-oriented writing through practical journalistic exercises.

COMD 541 Writing for Media
Students in this course will be given methods for developing concepts for media projects through exercises in creative brainstorming, concept selection, development, and refinement, as well as research projects and seminars on topics related to media writing in the students’ area of
interest such as fictional, documentary, or experimental screenwriting, or writing for digital and/or interactive media. Workshops of the students’ writing will also be held throughout the term.

**COMD 566 Documentary Form and Practice**  
Documentary has a long and rich tradition of theory and practice. Today digital technologies once again revitalize documentary productions. In this course students will be presented with an overview of central documentary issues. They will develop an understanding of the fundamental aesthetic tools of documentary production through lectures, screenings, exercises and individual short projects.

**COMD 590 Research Topics**

**COMD 599 Master's Thesis**

**GRA 501 Graduate Studio I**  
Graduate Studio I examines and practices with visual communication and design problems within the framework of contemporary culture. It emphasizes a critical approach to existing solutions and encourages students to develop fresh perspectives through new concepts, alternative forms and relations parallel with the changing dynamics of the society. The students will be expected to exercise their own observations and interpretations around suggested topics and to communicate their concepts in design language with their desired media. The topics will cover real-life and/or fictional design scenarios and aim to motivate research, conceptual and visual experimentation, and a sophisticated integration of form and content towards a design solution.

**GRA 502 Graduate Studio II**  
This course allows students to produce a media project in any fictional or semi-fictional time-and-motion-based medium or form. From traditional dramas or comedies to experimental, animated, or interactive projects or multimedia installations, students will carefully develop and design their own media concept and bring it to fruition, culminating in an exhibition at the end of term. The emphasis of the course will be on form expressing function.

**GRA 503 Illustration I**  
Illustration is creating and using pictures to communicate a subject. This course aims to educate illustrator-artists for various fields of visual communication. Studies of different techniques and media; character generation; illustration for children’s literature, fiction, and technical books as well as artistic illustration will be among the topics which will be determined depending on the students’ talents and interests.

**GRA 504 Illustration II**  
This course aims to enable students to carry out studies with wide practical applications of any field of illustration. From editorial to literary, commercial to technical, illustrations different areas will be covered with an emphasis on developing individual methods.

**GRA 511 Typography I**  
Typography is a means to make the written language visible. This class focuses on the issues of typographic form – readability, syntax, expression; typographic conventions; image-type relationships; and the historical components in relation to technology and contemporary trends. The class will consist of lectures, critiques, research assignments and studio work which will aim the exploration of the typographic vocabulary, rethinking of the conventions, experimentation with new ideas and forms, and consequently the refinement of the typographic knowledge and skills.

**GRA 512 Typography II**  
This studio course deals with advanced problems of typographic design and communication. The dynamics of letterform, word and text type, and their complex possibilities for visualizing the verbal language will be explored. The studio will serve as an open space that invites individual interests to study and experiment with a wide array of topics from “type as image” to “theories on language,” “type design” to “kinetic” and “computational typography.”

**GRA 517 Image, Time and Motion I**  
Through digital technology, our moving image culture is being redefined. The computer enables the mixture of images captured through many different means (cinema, stills, and drawings), and enables new levels of representation. Video gave birth to simultaneity; the computer extends simultaneity to multiplicity. “Cinema becomes therefore a particular branch of painting” – painting in time. No longer a kino-eye, but a kino-brush. Will this shift through technology change the way we organize time and space to create forms of narrative, or are we developing new kinds of vertical narratives? This course will engage students to make meaningful generalizations for interpreting or evaluating local experiences and practices in digital media, art and communication.

**GRA 518 Image, Time and Motion II**  
A continuation from “Image, Time and Motion I.” The course is an extended attempt to think about popular developments of time-based media in digital environments. The focus as on the critical discourse created through the works of digital artisans, net artists and cyber entrepreneurs as well as the theoretical and analytical localization of current trends.

**GRA 519 Critical Approaches to Advertising Consumer Culture**  
This course introduces students to the critical scholarship on advertising and the economic, social, and cultural context in which modern advertising has emerged, a context often called consumerism or consumer culture. While some emphasis is placed on the semiotics of advertising, more is placed on the ways in which advertising has become a crucial component in the complex whole of contemporary culture both informing and informed by that culture. Significant attention is thus given to the historical development of modern advertising; to the cultural/ideological power of advertising, with regard to both form and content; and, to the implications of the material-economic power of advertising as an industry that supports other cultural industries and forms (newspaper, magazines, television, the Web, etc.)

**GRA 520 Critical Approaches to Popular Culture**  
The aim of this course is to introduce students to a range of theoretical and methodological approaches to the study of popular culture. Particular emphasis is placed on current critical-cultural approaches arising out of cultural studies, postmodern theory, and feminism; attention is also given, however, to traditional communication theories, as well as to semiotic and sociological approaches.

**GRA 521 Animation**  
Contemporary techniques for animated cartoons, movie and TV titles with emphasis on animation with computer imaging techniques, and the aesthetic issues of the medium and its relation to traditional visual arts and film.

**GRA 541 Graphic and Visual Representation**  
The aim of this course is to make students familiar with conventional and recent theories, issues, and debates in the fields of graphic and visual arts. The course will begin with a discussion of the origins of graphic and pictorial representation in early human cultures. Then, the notion of representation with special emphasis on its aesthetic and visual aspects will be examined. The course will particularly focus on the relations between perception, image, language and subjectivity, and will examine several theories of visibility and image such as semiotics, psychoanalysis and postmodern approaches.
GRA 542 Mass Media and Visual Technologies
This course aims to present recent developments in the field of visual media and technologies. It begins with an overview of the transformation of vision since the Renaissance and examines the specificity of modern mass media as social institution and visual technology. Several theories of media and approaches to technology are discussed and particular emphasis is given to recent technologies such as television, computers and virtual reality as well as urban space as a visual and technological environment.

GRA 555 On Critical Reasoning and Artwork
The aim of this course is to teach students the basic concepts needed to analyze how critical reasoning and transformation of the world and the object has been articulated with artistic creativity. The course also aims to shed light on the ontological problematic of the artistic work within this context.

GRA 556 What is Contemporary?
In today's world "contemporary" plays a leading role not only as an art (istic) concept, but as a holistic one that determines even the art(istic) production. After the impact of modernism at the beginning of the 20th century, visual arts and many related fields continue to find answers to the question what is contemporary? The aim of the course is to give students a basic and paradigmatic condition in consideration of emerging visions and modernity. In-depth investigations within post-modern conceptions.

GRA 558 Visual Communication Approach to Artistic Thinking
This course focuses on the process of artistic thinking and creation understood in terms of visual communication and visual arts. The ways in which artistic thinking is shaped at the perceptual, conceptual and semiotic level of processing information will be explored. At the conceptual and semiotic levels the focus will be on the ways in which social, political and cultural factors generate patterns of visual communication. Examples from graphic art, painting, sculpture and architecture will be analyzed. The course will have a seminar format, combining lectures with student research on specific topics, which will be presented in class and discussed. The student presentation will be developed into term papers.

GRA 561 Philosophy of Modern Art
In-depth descriptions of contemporary art and the concepts underlying it in the international community. Analyses and evaluations of recent developments and new movements in fine arts during the 20th century. Discussion of the relationships between contemporary art and philosophy.

GRA 562 Current Perspectives with Post-Modernity
Specific works of art, images and objects are examined through diverse philosophical perspectives within post-modernity. In-depth investigations within post-modern condition in consideration of emerging visions and conceptions.

GRA 565 Photography as a Contemporary Medium I
A theoretical course on photography in general, with emphasis on the history of the medium as a means of artistic expression and its counterpart in the commercial area, as well as the recent theories on interpretation of photography.

GRA 566 Photography as a Contemporary Medium II
A continuation of GRA 565, focusing on the outcome of photographically produced imagery in artistic and commercial fields and the use of this imagery in electronic media such as video and computer graphics.

GRA 567 Semiotics and the Work of Art I
An examination of related terms and concepts such as sign and significance. Art as a signifying practice. First semiotics: linguistics and the emphasis on text. Second semiotics: the introduction of psychoanalysis and the role of the receiver. Current trends in semiotics and diverse approaches to art within a cultural context.

GRA 568 Semiotics and the Work of Art II
A continuation of Semiotics and the Work of Art I. This course offers a critical look into the classical notions of semiotics and the discussions they raise. It also places more emphasis on the relationship between theory and analysis. There is a focus on the nature of the critical discourse. Students are expected to produce written work on the analysis of works of art.

GRA 590 Research Topics

GRA 599 Master's Thesis

IAED 511 Research Methods I
A foundation course that deals with systematic methods regarding information acquisition, verification of sources, theory of interpretation, and hypothesis formulation for developing a critical ability to understand and study issues related to interiors.

IAED 587 Spatial Practices
Today, spatial practices (i.e., the relationship between bodies, spaces and the socio-cultural context) constitute the focus of a broad range of disciplines not necessarily confined to architecture, interior architecture and planning. Subjectivity and space are studied as part of a web of complex entanglements including issues of representation, identity and power mechanism. The aim of this course is twofold: on the one hand, it provides familiarity with recent theoretical developments regarding subject/space relationships; on the other hand, it provides the tools for interpretive explanations of concrete practices with particular focus on the materiality of space. Students are expected to do regular reading and to participate and share their individual research findings in class discussions.

PNT 511 Philosophy of Art
The leading views in the fine arts are discussed and analyzed from an artistic point of view. The social environment and world views in which painting, sculpture, and architecture arose and developed are investigated as well as the logic of artistic formation that appeared parallel to the social and artistic views.

PNT 512 Psychology of Art
Psychological nature of the artistic environment and artist. Relationship of the psychology of creation and artwork. Views of some researchers in that field.

PNT 515 Issues and Problems in Contemporary Art I
Contemporary issues and problems of art and artists are selected for analysis and discussion. Students are expected to participate in class discussions, conduct in-depth research, and write on the topics covered.

PNT 516 Issues and Problems in Contemporary Art II
Advanced issues and problems in contemporary art. Works by various artists are selected and analyzed in terms of approaches and trends. Students are encouraged to participate in class discussions and are expected to do in-depth research as well as write term papers on contemporary art issues.
MAN 536 International Marketing Management
This course provides the students with an understanding of marketing planning and strategy from international, multinational and global perspectives. The world should be viewed as a marketplace with a resulting need for familiarity with various environmental similarities and differences. These may necessitate adaptation and/or standardization of marketing programs, strategies and plans from nation to nation. A major focus of the course is on strategic marketing management techniques, issues, strategies and problems within an international marketing framework.

MAN 538 Advertising Management
This course deals with the strategic management of communications. Advertising is treated as a major form of communication and the role and nature of other communication and promotion activities are also discussed. The objective of the course is to provide analytical skills useful in strategic planning and evaluation of advertisements. An understanding of the advertising industry and agency/client relationship is also provided with the aid of cases, illustrations, and guest speakers.

MAN 539 Consumer Behavior
This course deals with the understanding of the behavior of people as consumers and the strategic implications of this understanding for marketing managers. Consumer analysis is one of the critical components of marketing analysis in examining the problems and reaching effective decisions. Principles from various social sciences are integrated to analyze the consumer judgment process. Marketing applications of the various concepts are illustrated using cases.

SAMPLE OF RECENT PUBLICATIONS

• S. Atakan-Duman, E. Ozdora-Aksak, “The Role of Corporate Social Responsibility in Online Identity Construction: An Analysis of Turkey’s Banking Sector”, Public Relations Review (Forthcoming)


• C. Kennedy-Karpant, R. Rogers, L. Romance, and Exoticism in French Cinema of the 1930s, Madison NJ: Fairleigh Dickinson Univ, (2013)


• A. Treske, Video Theory. Online Video Aesthetics or The Afterlife of Video, Transcript Verlag, (2015)


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Dr. Bülent Çaplı,
Professor in Residence,
Department of Communication and Design

Bülent Çaplı graduated from the AİTİA School of Journalism. He received an M.Sc. degree from Utah State University and a Ph.D. from Istanbul University. He has been the recipient of both Fulbright and Chevening scholarships, and a visiting fellow at the University of Manchester and the University of Florida. Dr. Çaplı’s research and teaching interests include broadcast journalism, media policies, the political economy of media, media ethics, and documentary filmmaking.

He has written numerous books and articles on broadcasting policies, media ethics, and documentaries. He is also the director and co-director of many documentaries, and his works have won a number of awards in Turkey. Most notably, Dr. Çaplı has co-produced/directed award-winning television documentaries on Turkish political history, including Halef, İsmet Paşa, 12 Mart, and Demir Kırat.
The Department of Interior Architecture and Environmental Design offers graduate programs leading toward the M.F.A. and Ph.D. degrees. The Master of Fine Arts program focuses on Building Science, Design Theories and Methods, and Environmental Psychology and Design. The Ph.D. program is tailored around a curriculum based on intensive research.

FACULTY

YAŞEMİN AFACAŅ, Assistant Professor. Ph.D., Interior Architecture and Environmental Design, Bilkent University, 2008. Inclusive design, residential environments for elderly people, kitchen design.

BURÇAK ALTAY, Assistant Professor of Practice. Ph.D., Interior Architecture and Environmental Design, Bilkent University, 2000. Value systems in design.


HALİME DEMİRKAN, Professor and Director of the Graduate School of Economics and Social Sciences. Ph.D., Architecture, Middle East Technical University, 1989. Design methods and theories, human factors.

Degree Requirements: After the completion of at least 24 units of course work in two successive terms, the candidates must take two seminar courses in their area of interest and prepare and submit a thesis.

DOCTOR OF PHILOSOPHY IN INTERIOR ARCHITECTURE AND ENVIRONMENTAL DESIGN

The program promotes inquiry into various issues of design in both theoretical and practical fields by encouraging students to carry out research on unexplored topics. The research conducted is expected to be either a novel contribution to art and science, the introduction of a new method, or a completely innovative application of a widely known method. Through investigating pertinent past and current developments in Turkey and the world at large within a cross-cultural framework, students examine various aspects of processes in design, implementation, performance, and evaluation in order to achieve the objective of producing work that demonstrates competence in research.

Admission: Applicants are required to have a bachelor’s and a master’s degree in a relevant field. Applicants should take the ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sinavı/Academic Personnel and Postgraduate Education Entrance Examination) and must satisfy the announced minimum requirements. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of a foreign country may take the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of proficiency in English. Admittance is also determined through an interview conducted before the beginning of each academic year. The date and place of the interviews are announced each year by the university.

Degree Requirements: The minimum course load for the Ph.D. program is 24 credit units. After completion of the courses, the Ph.D. candidate must take a qualifying examination, make a presentation related to his/her dissertation, and submit a dissertation proposal, which will be evaluated by a jury composed of well-known scholars in the field. Upon favorable evaluation by the jury, the candidate will proceed with work on the dissertation. After its completion, a similar jury will examine the candidate and make a final decision regarding conferral of the degree.

COURSE DESCRIPTIONS

IAED 501 Graduate Studio I
An emphasis is placed on improving research skills, analysis, discussion, and a theoretical approach to spatial design. Students are expected to develop sensitivity towards socio-cultural issues, environmental concerns, and practices of users.

IAED 502 Graduate Studio II
Students are expected to conduct research on particular topics; critically analyze assigned readings and raise/engage in discussions on those topics. Within the generated theoretical framework, students work on specific design projects, furthering their skills of problem solving, space creation and design presentation.

IAED 511 Research Methods I
A foundation course which deals with system and methods regarding information acquisition, verification of sources, theory of interpretation and hypothesis formulation for developing a critical ability to understand and study the issues related to interiors.

IAED 512 Statistical Analysis
The principles of statistical analysis methods, concepts of data collection and structuring are discussed with the aim of providing the student with the necessary tools to deal with large amounts of data and to draw conclusions from such data.

IAED 514 Research Methods II
This is a tutorial course involving the conduct of an actual research project in interior and/or environmental design. The students shall be responsible, individually and in group work, for initiating, designing and conducting a research project under the guidance of the instructor. The work will include gathering and analyzing data, drawing conclusions and preparing a research report.

IAED 543 Environmental Analysis I
An interdisciplinary course designed to develop cognitive skills and sensitivity for the evaluation of the built environment. Investigation of techniques and methods pertaining to analysis, synthesis and physical, social aspects of spatial formations will be dealt. Students are expected to participate in seminars and work on case studies in the studio.

IAED 544 Environmental Analysis II
The methodology of environmental research and measurement technique for various aspects of environmental attitudes and user responses/behaviors are the major topics in this course. The students are expected to carry out empirical analyses for the measurement of any aspect in the field. IAED 543 is recommended as a preliminary.

IAED 571 Lighting and Color
Importance of light and color as design factors, physics of light, light and vision, light sources and lighting methods, symbolic and functional color, color in interiors.

IAED 574 Art, Science and Technology
A seminar-based course to investigate the characteristics of various disciplines that relate to art, science and technology and correlate to the unity of mankind.

IAED 583 Design Principles and Theories
The aim of the course is to develop a critical understanding of theories of architecture and principles of design. Course will explore, question and discuss classical, modern and contemporary theories of architecture, the works of some well-known architects as well as works of the students. The course will be on a mixture of lectures, seminars and applied studies. The students are expected to do regular reading and to take active part in seminar preparations and discussions.

IAED 590 Seminar in Research Topics

IAED 599 Master's Thesis

IAED 690 Seminar in Advanced Research Topics

IAED 699 Ph.D. Dissertation

SAMPLE OF RECENT PUBLICATIONS


• B. Altay, “Developing Empathy in Design: The Grandparent Experience”, Educational Gerontology (Forthcoming)


• B. Altay, Developing empathy towards older adults in design, Educational Gerontology (2016)

• B. Altay, G. Ballice, E. Bengisu, S. Alkan-Korkmaz, E. Paykoc, “Embracing student experience in inclusive design education through learner-centred instruction”, Int J of Inclusive Education (Forthcoming)


• B. Ulusoy, N. Olgunturk, “Understanding responses to materials and colors in interiors”, Color Research and Application (Forthcoming)


• S. Ozaloglu, “An attempt to transform popular religious imaging into contemporary mosque architecture: Ahmet Hamdi Akseki Mosque”, J of Architectural and Planning Research (Forthcoming)


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Dr. Halime Demirkan, 
Professor,  
Department of Interior Architecture and Environmental Design

Halime Demirkan holds bachelor’s and master’s degrees in industrial engineering and a Ph.D. in architecture from Middle East Technical University. She currently is the Director of the Graduate School of Economics and Social Sciences. Her previous professional experience has included appointments as a research assistant and instructor in the departments of Industrial Engineering and Industrial Design at Middle East Technical University, and as a researcher at the Building Research Institute of the Scientific and Technical Research Council of Turkey.

She has published articles in various international journals, including Creativity Research Journal, the Journal of Creative Behavior, Design Studies, Applied Ergonomics, Learning and Instruction, the Journal of Engineering Design, and Optics & Laser Technology. Her work has also appeared in many edited books, such as Creativity, Design and Education, Color and Design, and The Handbook of Interior Design. Her current research and teaching interests include creativity in the architectural design process, design education, and design for an aging population.
The graduate program in the Department of Music instructs professional artists in the areas of performance and creativity with an emphasis on studies in the fields of music education and research. Candidates are expected to have an undergraduate degree in a related field and must pass an admission examination and interview.

Students have the opportunity to study and develop skills under the direction of internationally renowned Turkish and foreign faculty members and to display the knowledge and experience they acquire in recitals and concerts. These public performances are held by the Faculty of Music and Performing Arts to give students advanced professional experience, thereby widening their horizons. The faculty’s achievements as a leader in quality education and artistic activity have made it a center of excellence.

FACULTY


KAĞAN KORAD, Associate Professor, Associate Dean and Department Chair. D.M.A., Proficiency in Art, Classical Guitar, Bilkent University, 2001. Instrument, chamber music, ensemble.


ISİN METİN, Assistant Professor. D.M., Proficiency in Art, Composition, Bilkent University, 2000. Composition and orchestration.


SARDOR RASULOV, Instructor. M.M., Violoncello, Moscow “Tchaikovsky” State Conservatory, 1982. Member, BSO.


TAHSİN TOLGA YAYALAR, Assistant Professor. Ph.D., Composition, Harvard University, 2010.

MASTER OF ARTS IN MUSIC

The Master of Arts program comprises a wide range of options for majors in creative and interpretational fields of musical art in three curriculum tracks:

Music Performance and Interpretation

The curriculum track for the music performance and interpretation option comprises majors in musical instruments or chamber music. The goal of the thesis program in music performance and interpretation is to assist advanced musicians who hold an undergraduate degree in honing their musical performance skills to reach an international standard, and to enhance their interpretative skills by building on what they have gained from previous studies in music theory, history and the relationship of these areas with other academic disciplines. A candidate choosing the Master of Arts program may expect to advance in a professional performing career as well as to develop academic skills in writing and research. The M.A. degree in music performance and interpretation
is offered in the following areas of specialization: flute, oboe, clarinet, bassoon, horn, trumpet, trombone, tuba, percussion, harp, piano, classical guitar, violin, viola, violoncello, double bass, operatic voice, and chamber music.

Conducting
The conducting program aims to provide highly gifted candidates with the practical and theoretical skills, tools, and knowledge to progress in this most demanding and complex discipline, enabling them to step into the role of conductor with an operatic or orchestral ensemble upon graduation. Students will receive individual instruction and training in conducting techniques and repertoire, along with musicianship, theory, and history courses and seminars as appropriate. They will gain an all-round understanding of the practical, technical, artistic, psychological, and business issues involved in the profession, and will have the opportunity to build podium and performance experience in order to achieve technical proficiency and develop artistic integrity.

Composition
The Master of Arts in composition program is designed to enable each student to contribute to the field of composition in a productive, resourceful, and personal way. The program provides intensive training through individual lessons, lecture courses, and weekly seminars in the student’s field, supported by studies in theoretical and historical subjects.

Students also participate actively in master classes to further promote their careers. Some recent master classes held at the Faculty of Music and Performing Arts

Boris Berezovsky, piano
Branimir Slokar and Armin Bachmann, trombone
Olivier Charlier, violin
Sharon Isbin, guitar
Michele Crider, voice
Naoko Shimizu, viola
Gabor Boldoczki, trumpet
Emmanuel Phaud, flute
Patric De Ritis, bassoon
Anna Serafinska, voice
Mark Andre, composer
Riccardo Piacentini, composer
Roderic de Man, composer
Pamela Z, voice

RECENT SCHOLARLY PUBLICATIONS

Faculty Profile:
Dr. Tolga Yayalar,
Assistant Professor,
Department of Music

Tolga Yayalar received a B.A. degree in jazz composition from Berklee College of Music in 2000, and a Ph.D. degree in composition from Harvard University in 2010. Since then, he has been an assistant professor of music at Bilkent University, where he teaches composition as well as courses related to music theory and electronic music. Mr. Yayalar’s musical output includes mostly chamber and orchestral music with and without electronics. His artistic focus centers on the idea of creating a sonic experience with a sound world that goes beyond stylistic conventions. His recent music puts diverse historical materials into a foreign and unfamiliar context, in which the meaning of the musical material is completely transformed. Mr. Yayalar’s music has been performed in the US, Europe, and Latin America by ensembles and soloists including Le Nouvel Ensemble Moderne, Ensemble FA, the Ying Quartet, Alarm Will Sound, OrchestrUtopica, the Callithumpian Consort, the Hazarden Ensemble, the Platypus Ensemble, Earplay, Chamber Players of the League/ISCM, Orchestre National de Lorraine, the Adorno Ensemble, the Millennium Chamber Players, the CNM Ensemble, the Yesaroun Duo, Samuel Z. Solomon, Mari Kimura, Benjamin Schwartz, Seda Roeder, and Garth Knox, and at festivals including the BeethovenFest, Berliner Festspiele – MaerzMusik, the New York City Electroacoustic Music Festival, ISCM World New Music Days, Acanthes, June in Buffalo, Mediterranean Contemporary Music Days and La Ciudad de las Ideas in Mexico. His awards and honors include the Donald Aird Memorial Prize, the Adelbert Sprague composition prize, the Blodgett String Quartet composition prize, the George Arthur Knight Prize, the Millennium Chamber Players competition prize, and the League of Composers/ISCM composition award. His music is published by BabelScores.
The Department of Architecture offers the Master of Science in Architecture program to equip students with advanced skills in architectural design and in-depth critical thinking with regard to architectural theories. The program is designed for students who wish to excel in using current design technologies and broaden their creative thinking.

**FACULTY**

**JESUS ESPINOZA ALVAREZ**, Instructor. M. Arch., Architecture, University of Arizona, 1996


**MELTEM Ö. GÜREL**, Associate Professor and Department Chair. Ph.D., Architecture, University of Illinois at Urbana-Champaign, 2007. Architectural theory/history, criticism, cross-cultural histories of modernism, gender and space, design education.


**ŞULE TAŞLI PEKTAŞ**, Assistant Professor. Ph.D., Art, Design and Architecture, Bilkent University, 2003. Design methods, computer aided design, design education


**MASTER OF SCIENCE IN ARCHITECTURE**

**Admission:** All applicants are required to have a Bachelor of Architecture degree or a B.S. degree in a related field of design. Students with a B.S. degree in a related field may be requested to take several undergraduate courses in architecture to acquire necessary background in the field. Evaluation of applicants is based on their ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı/Academic Personnel and Postgraduate Education Entrance Examination) scores, past academic records, reference letters, and an interview. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of another country may take the GRE instead of the ALES. All nonnative speakers of English are required to submit proof of satisfactory knowledge of English.

**Degree Requirements:** In addition to at least 24 credit units of course work, the M.S. degree candidate must prepare and successfully defend a thesis. The standard duration of study for the M.S. program is four semesters; the maximum duration is six semesters.

**COURSE DESCRIPTIONS**

**ARCH 513 Theory and Methodology**
Deciphering and understanding approaches for analyzing the built environment. Evaluation and interpretation of texts related to architectural histories and theories.

**ARCH 514 Architectural Readings**
Critical analysis of architectural texts; methods for analyzing architectural buildings; ways of deciphering digital and traditional (re)presentations of architecture.

**ARCH 515 Topics in Architectural Technology**
A look at architectural technologies; digital opportunities; contemporary construction applications, developments in building materials.

**ARCH 516 Computational Design Technologies**
Digital tools, media, digital geometries and parametric approaches that can be utilized in the process of producing architectural solutions.

**ARCH 517 Advanced Visualization Studio**
Advanced techniques in computer aided visualization. Virtual environments, internet based platforms and software packages for design related disciplines are utilized for creating design visualizations.

**ARCH 533 Analysis of Buildings**
Critical analysis of buildings both in the process of design and in their life cycles. Methods and stages of analysis; digital methods. Implementations through samples.

**ARCH 534 Structural Analysis**
Analysis of architectural designs and buildings in terms of load distribution, load bearing and formal properties. Decomposing the building structure into structural components; analysis of the design from the view point of physical behavior.

**ARCH 550 Current Issues in Architectural Design**
A look at the contemporary buildings both from our geography and from abroad. Studies on the current architectural discussions.
ARCH 563 Modern Turkish Architecture
Study of architectural developments in Turkey from 1900 to the present within a socio-cultural framework; particular emphasis on the interrelationship of architecture and political developments; survey of important buildings, key figures of architecture and urban design; extensive readings on the subject.

ARCH 564 Space and Culture
Investigations on the relationship between culture and the built environment, including the work of architects, designers, and planners as well as the ordinary people who create our surroundings. Focus is on the theoretical basis for architecture and cultural studies.

ARCH 565 Contemporary Architecture and Theory
Review of the developments in Western architectural culture from the turn of the twentieth century to the present; contemporary architectural movements and theories.

ARCH 566 Architectural Theory and Criticism
Investigation of architectural history, theory and criticism on special topics; social, cultural and political influences on architecture; readings of important theoretical and critical writings about a broad range of topics.

ARCH 590 Graduate Seminar
Academic presentations by graduate students on the theses they are preparing, answering relevant questions on the thesis, revisions.

ARCH 599 Master's Thesis
Preparations towards the presentation of the thesis to the thesis jury, necessary format adjustments according to the Institute requirements.

SAMPLE OF RECENT PUBLICATIONS


• C. Chen-Yu, P. Goad, P. Myers, “China in Denmark: The transmission of Chinese art and architecture from the view of Jørn Utzon’s Danish socio-cultural background”, Nordic Journal of Architectural Research (Forthcoming)


Contact:
Dr. Meltem Ö. Gürel
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Meltem Ö. Gürel received her B.S. degree as well as a Master of Architecture degree (1990), and a Ph.D. in Architecture (2007) from the University of Illinois at Urbana-Champaign (UIUC). Her Ph.D. studies were supported by the Alan K. and Leonarda F. Laing Fellowship, the Edward L. Ryerson Traveling Award in Architecture, the Rexford Newcomb Award, and the Francis J. Plym Doctoral Fellowship; her doctoral dissertation received the ARCC/King Student Medal.

Prior to joining Bilkent University as a faculty member in 1994, Dr. Gürel practiced architecture in Illinois and New York; in 1997, she was a visiting scholar at UIUC's School of Architecture. She became the founding head of Bilkent’s Department of Architecture in 2011 and currently continues as chair of the department. Previously, she had served as chair of the Department of Interior Architecture and Environmental Design (2010-2012).

Dr. Gürel’s research interests include architectural theory and criticism, cross-cultural histories of modernism with an emphasis on social, gender, and cultural studies as they have influenced the built environment (especially in Turkey) in the mid-twentieth century, space-culture relationship, and design education. She has published numerous articles in journals including the *Journal of Architecture*, the *Journal of Architectural Education, Gender, Place and Culture*, the *Journal of Design History*, and the *Journal of Architectural and Planning Research*. Her work has also been published in a number of edited books, such as *The Routledge Companion to Design Studies and Performance, Fashion and the Modern Interior: From the Victorians to Today*. She is the editor of *Mid-Century Modernism in Turkey: Architecture Across Cultures in the 1950s and 1960s* (Routledge, 2016).
The Department of Chemistry aims to provide a fundamental understanding of chemical applications associated with innovative technologies, focusing on nanomaterials, electronics, sensors, solid-state devices, display systems, petrochemicals, medical diagnostics, cancer therapy, drug delivery, and automotive and aerospace applications. Current research areas are organic and inorganic chemistry, polymer/supramolecular chemistry, theoretical and computational chemistry, surface chemistry, catalysis, electrochemistry and nanostructured materials for sustainable energy systems, renewable energy generation, energy conversion, and chemical/electrical energy storage.

FACULTY

ENGIN UMUT AKKAYA, Professor. Ph.D., Organic Chemistry, Ohio State University, 1989. Supramolecular chemistry, fluorescent chemosensors, logic gates, self-assembly, rational design of sensitizers for DSSC and PDT, molecular devices.


BURAK ÜLGÜT, Assistant Professor. Ph.D., Physical Chemistry and Analytical Chemistry, Cornell University, 2007. Electrochemical measurements, energy storage systems, in-situ spectroscopy and electrochemistry

MASTER OF SCIENCE IN CHEMISTRY

Admission: All applicants are required to have a B.S. degree in chemistry, chemical engineering, or a related field of science or engineering. Students with a B.S. degree in an area other than chemistry may be required to take certain undergraduate courses in order to acquire the necessary background in the field. Evaluation of applicants is based on their ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı/Academic Personnel and Postgraduate Education Entrance Examination) scores, past academic records, reference letters, and an interview. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of another country may take the GRE (Graduate Record Examination) instead of the ALES. All non-native speakers of English are required to submit proof of satisfactory knowledge of English.

Degree Requirements: In addition to completing at least 21 credit units of course work, the M.S. degree candidate must prepare and successfully defend a thesis. The expected duration of study for the M.S. degree is 4 semesters; the maximum duration is 6 semesters.

DOCTOR OF PHILOSOPHY IN CHEMISTRY

Admission: All applicants are required to have a B.S. degree in chemistry or a related field of science or engineering. Evaluation of applicants is based on their ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı/Academic Personnel and Postgraduate Education Entrance Examination) scores, past academic records, reference letters, and an interview. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of another country may take
the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of satisfactory knowledge of English.

Degree Requirements: The completion of 21 credit units of course work beyond the M.S. level is required. Ph.D. candidates must pass a qualifying exam, typically in their fourth semester, and then must prepare a dissertation proposal. Preparation and defense of a dissertation based on original research is the centerpiece of the program. The standard duration of study for the Ph.D. degree is 8 semesters for students who enter the program with an M.S. degree; the maximum duration is 12 semesters.

COURSE DESCRIPTIONS

CHEM 503 Chemical Kinetics

CHEM 504 Group Theory and Its Chemical Applications
Group theory, molecular symmetry, Ligand field theory. Applications: symmetry aspects of MO theory, spectroscopy of transition metal complexes, metal-ligand bonding, molecular vibrations and symmetry.

CHEM 505 Nuclear and Radiochemistry

CHEM 506 Chemical Thermodynamics

CHEM 507 Statistical Thermodynamics

CHEM 511 Quantum Chemistry I

CHEM 513 Environmental Radiochemistry

CHEM 515 Molecular Spectroscopy

CHEM 521 Surface Chemistry I
The central idea of this course is to describe the present state of modern surface science within a context dictated by chemistry. The course offers understanding of the surface phenomena at molecular-level and their relation to the various surface processes. It is focused on the properties of the solid-gas and solid-liquid interfaces and could be interest to students of chemical, physical and engineering science.

CHEM 523 Concepts in Materials Science
Fundamental concepts in materials science will be covered. These topics include plastic deformation of crystalline solids and dislocations theory, defects in solids, diffusion phenomena, interfaces and kinetics of phase transformations. Nucleation and growth phenomena will also be covered. Several metallic, ceramic and polymeric systems will be investigated as case study examples.

CHEM 531 Advanced Organic Chemistry I
The important classes of organic reactions and methods by which chemists obtain information. The main focus of the course is on reaction mechanisms. The experimental evidence upon which the mechanistic ideas are built will be emphasized. This course will also emphasize heterolytic reactions.

CHEM 532 Advanced Organic Chemistry II
Physical Organic Chemistry: MO theory, population analysis, frontier orbital theory, pericyclic reactions, transition states, reactive intermediates, understanding reaction mechanisms.

CHEM 534 NMR Spectroscopy for Organic Structure Determination
Fundamental theory and practical aspects of Nuclear Magnetic Resonance (NMR) spectroscopy with special emphasis on chemical shifts, spin-spin couplings and spin systems. Applications of 1-D 1H- and 13C-NMR spectroscopic techniques. Strategies for the structure determination of unknown compounds.

CHEM 537 Supramolecular Chemistry
The course introduces general principles of molecular recognition, complex formation and host design, with emphasis on thermodynamics of multi-site host-guest complexation and nature of supramolecular interactions. Structure, properties, and synthesis of major categories of cation-, anion-, and neutral molecule-binding hosts are discussed, and crystal structures of enzyme-inhibitor complexes are analyzed from the point of view of the basic concepts of host-guest chemistry.

CHEM 541 Advanced Inorganic Chemistry I
Electronic spectra of complexes, reaction mechanism of d-block complexes, d- and f-block organometallic compounds, inorganic chains, rings, cages and clusters, catalysis and characterization of catalytic materials.

CHEM 542 Advanced Inorganic Chemistry II
Solid state synthesis, electronic and optical properties of solids. Solid state characterization methods.

CHEM 551 Special Topics in Physical Chemistry I
CHEM 552 Special Topics in Physical Chemistry II

CHEM 556 Advanced Instrumental Analysis
Principles, instrumentation and applications of modern instrumental methods, including spectroscopic techniques such as AAS, IC, IMS, FTIR, Raman spectroscopy, Luminescence Spectroscopy, Mass Spectrometry.

CHEM 561 Special Topics in Inorganic Chemistry I
CHEM 562 Special Topics in Inorganic Chemistry II

CHEM 571 Special Topics in Organic Chemistry I
CHEM 572 Special Topics in Organic Chemistry II
SAMPLE OF RECENT PUBLICATIONS


• R. Mishra, E. Ulker, F. Karadas, “One-Dimensional Copper(II) Coordination Polymer as an Electrocatalyst for Water Oxidation”, ChemElectroChem (Forthcoming)

• S.V.K. Nune, A.T. Basaran, E. Ulker, R. Mishra, F. Karadas, “Metal Dicyanamides as Efficient and Robust Water Oxidation Catalysits”, ChemCatChem (Forthcoming)


Faculty Profile:
Dr. Şefik Süzer, Professor,
Department of Chemistry

Şefik Süzer completed a B.S. in chemistry at Middle East Technical University, Ankara, Turkey, in 1970, and a Ph.D. in chemistry at the University of California, Berkeley, in 1976. He subsequently did postdoctoral research work at Sydney University and Freiburg University and worked in the Middle East Technical University Department of Chemistry before joining Bilkent University in 1992. He is currently serving his second stint as chair of the department, having previously held the post from 1992 to 2007. He has spent sabbaticals at the University of Virginia (1985-87), the University of Michigan (2000-01), the University of Delaware (2007-08), the Fritz-Haber Institute in Berlin (2013), and Osaka University (2014).

A recipient of an Alexander von Humboldt Fellowship, a Fulbright Research Scholarship, and the TUBITAK (Scientific and Technological Research Council of Turkey) Encouragement (1981) and Science Awards (1990), Prof. Süzer was elected a full member of the Turkish Academy of Sciences in 1993. He served as a member of TUBITAK’s Science Board from 2000 to 2008 and was named a Fellow of the American Vacuum Society in 2010. He is a member of the Turkish Chemical Society, the American Chemical Society, the American Vacuum Society, the Society for Applied Spectroscopy, the Materials Research Society, and the American Association for the Advancement of Science.

He has twice served as a member of the editorial board of the Journal of Electron Spectroscopy and Related Phenomena (1980-1990 and 2008 to the present). He has also been an editor of Applied Surface Science (2008-2011) and Surface Science Reports (2013 to the present), and an associate editor of Science Advances Today (2016 to the present). He is currently a member of the editorial board of the Journal of Electron Spectroscopy, Applied Surface Science, Spectroscopy and Dynamics, and the Turkish Journal of Chemistry.

Dr. Süzer’s research interests include spectroscopy, surface science and charge storage in nanostructured materials. His contributions have been highlighted as cover features in the Journal of Physical Chemistry (2004) and Physical-Chemistry-Chemical-Physics (2016).

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MATERIALS SCIENCE AND NANOTECHNOLOGY

HİLMI VOLKAN DEMİR, Professor in the Department of Electrical and Electronics Engineering, Department of Physics and Director of Institute of Materials Science and Nanotechnology, Ph.D., Electrical Engineering, Stanford University, 2004. Light-emitting diodes (LEDs), semiconductor nanocrystal optoelectronics, energy transfer driven devices and sensors, nanoparticles/nanocomposites, nanophotonics, RF sensing bioimplants and medical devices.

ENGİN DURGUN, Assistant Professor, Ph.D., Physics, Bilkent University, 2007. Computational materials design, solar fuels, cement chemistry, surface phenomena, multiferroics, hydrogen storage, nanowires/nanoclusters, magnetism/spintronics, nanotribology.


TALİP SERKAN KASIRGA, Research Assistant Professor, Ph.D., Physics, University of Washington, 2013. Experimental investigation of strong electronic correlation effects at low dimensional systems and their applications in hydrogen sensing, novel logic and storage devices, new generation light emitting diodes, using vanadium oxides and layered transition metal dichalcogenides.

BÜLEND ORTAÇ, Assistant Professor, Ph.D., Physics, Rouen University, 2004. Fiber optic concepts; CW and pulsed laser; amplification systems; nonlinear optics; ultrafast laser physics; THz generation; application of laser systems.

URARTU ÖZGÜR ŞAFAK ŞEKER, Research Assistant Professor, Ph.D. in Molecular Biology-Genetics and Biotechnology, Istanbul Technical University, 2009. Synthetic Biotechnology, Genetic Engineering, Bioinspired Materials and Bionanotechnology.

AYŞE BEGÜM TEKİNAY, Assistant Professor, Ph.D., Molecular Biology, Rockefeller University, 2006. Nanobiotechnology, regenerative medicine, stem cell differentiation, drug delivery, biosensors, human genetics, molecular characterization of novel genes, animal models.

TAMER UYAR, Associate Professor, Ph.D., Fiber & Polymer Science, North Carolina State University, 2005. Multi-functional nanotextile materials, polymeric nanocomposites, functional polymeric and inorganic nanofibers.

EDA YILMAZ, Visiting Research Assistant Professor, Ph.D., Chemistry, Bilkent University, 2011. Electrochemical energy storage systems, lithium-oxygen batteries, lithium-ion batteries, surface characterization, spectroscopy, design and synthesis of nanomaterials.

In addition, faculty members from Physics, Electrical and Electronics Engineering, Chemistry, Molecular Biology and Genetics, Mechanical Engineering, and Psychology are involved in this interdisciplinary program.

MASTER OF SCIENCE IN MATERIALS SCIENCE AND NANOTECHNOLOGY

Admission: All applicants are required to have a B.S. degree in materials science and nanotechnology or a related field of science or engineering, such as physics, mathematics, chemistry, molecular biology and genetics, electrical and electronics engineering, mechanical engineering, chemical engineering, materials science and metallurgy, or food engineering, materials science and metallurgy, or food
engineering. Evaluation of applicants is based on their ALES (Akademik Personel ve Lisansüstü Eğitim İçi Sınavı / Academic Personnel and Postgraduate Education Entrance Examination) scores, past academic records, reference letters, and an interview. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of another country may take the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of satisfactory knowledge of English.

**Degree Requirements:** In addition to completing at least 21 credit units of course work, the M.S. degree candidate must prepare and successfully defend a thesis. The expected duration of study for the M.S. degree is 4 semesters; the maximum duration is 6 semesters.

**DOCTOR OF PHILOSOPHY IN MATERIALS SCIENCE AND NANOTECHNOLOGY**

**Admission:** All applicants are required to have a B.S. degree in materials science and nanotechnology or a related field of science or engineering such as physics, mathematics, chemistry, molecular biology and genetics, electrical and electronics engineering, mechanical engineering, chemical engineering, materials science and metallurgy, or food engineering. Evaluation of applicants is based on their ALES (Akademik Personel ve Lisansüstü Eğitim İçi Sınavı / Academic Personnel and Postgraduate Education Entrance Examination) scores, past academic records, reference letters, and an interview. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of another country may take the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of satisfactory knowledge of English.

**Degree Requirements:** The completion of 21 credit units of course work beyond the M.S. level is required. Ph.D. candidates must pass a qualifying exam, typically in their fourth semester, and then must prepare a dissertation proposal. Preparation and defense of a dissertation based on original research is the centerpiece of the program. The standard duration of study for the Ph.D. degree is 8 semesters for students who enter the program with an M.S. degree; the maximum duration is 12 semesters.

**COURSE DESCRIPTIONS**

**MSN 500 Concepts in Materials Science**
Fundamental concepts in materials science. Atom models; atomic and crystalline structure; mechanical (stress, strain, elasticity, deformation), electrical (conductivity, mobility, band structure, semiconductors), thermal (heat capacity, expansion, thermal conductivity), magnetic (ferromagnetism, domains and hysteresis, magnetic storage), and optical (radiation, reflection, transmission, luminescence, photoconductivity) properties of materials. The correlation between materials structure and its micro- and macroscopic properties.

**MSN 501 Atomic Structure, Mechanical and Thermal Properties of Materials**
Modern materials science and current trends; classification of materials; atomic structure; lattice; crystal; point and space groups; reciprocal lattice and k-space; x-ray diffraction; noncrystalline materials; imperfections; binding and bonding; elastic and plastic properties; dynamics of atoms; dynamical matrix and its symmetries; normal modes and phonons; Planck’s distribution; thermal properties; free electron system; quantum size effect and confinement.

**MSN 510 Imaging Techniques in Materials Science and Nanotechnology**
Introduction to advanced imaging techniques including atomic force microscopy (AFM), scanning tunneling microscopy (STM), transmission electron microscopy (TEM), scanning electron microscopy (SEM), and confocal microscopy.

**MSN 512 Biomedical Materials**
Types of biomedical materials and the material selection criteria. Chemical and physical properties of metals, ceramics, and polymers for use in biomedical applications. Material - biological entity interaction; biocompatibility, biodegradation. Special biomedical products, biomaterials, tissue engineering, applications and issues; heart valves, artificial bones, implants, blood vessel grafts.

**MSN 513 Micro and Nanostructured Sensors**
Introductory and fundamental concepts in sensors and transducers. MEMS, MOEMS, and NEMS structures. Overview of fabrication technologies. Optical sensors including plasmonic sensors, fiber and waveguide based sensing. Coupling of physical and chemical effects to optical devices. Electronic sensors including thin films, semiconductor device based sensors and novel electronic sensors using nanostructures.

**MSN 517 Fundamentals of Nanoscience**
Introduction to nanoscience and nanotechnology; societal implications of nanoscience: ethical, legal and environmental implications; nanotools: characterization methods; nanotools: fabrication methods; physical properties and phenomena: materials, structure, and the nanosurface; energy at the nanoscale: the material continuum: basic quantum mechanics and the solid state, quantum size effects; nanothermodynamics; synthesis and modification: carbon - based nanomaterials, chemical interactions at the nanoscale, supramolecular chemistry; chemical synthesis and modification of nanomaterials; bionanoscience: natural nanomaterials; biomolecular nanoscience: DNA, RNA and protein synthesis.

**MSN 518 Fundamentals of Nanotechnology**
Perspectives of nanotechnology; nanometrology; standard and nanomanufacturing; nanoelectronics; nanophotonics; nanomagnetism; nanomechanics; nanosurface and nanocomposite thin films, applications of thin films; nanocatalysis; nanocomposites and fibers; biological and environmental nanoeengineering; nonobitotechnology, biomimetics; medical nanotechnology; environmental nanotechnology.

**MSN 519 Applications of Microfluidics and Nanofluidics**
Characteristics of micro/nanofluidics. Transport phenomena, non-dimensional numbers, diffusion, settling, wetting, fluidic components (pumps, valves, choice of material, fabrication/production techniques). Lab-on-a-Chip (LOC) devices, diagnostic devices, LOC for cellular studies, high throughput studies, DNA/protein microarrays and tissue engineering. Organ-on-a-chip.

**MSN 521 Biotechnology**

**MSN 522 Molecular Biomimicry and Synthetic Biology**
Fundamentals of molecular biomimicry, and synthetic biology. Structure of biological molecules, self-assembly in biological systems, biological nanostructures, biology inspired material systems design, control of biomolecular interactions. Fundamentals of synthetic biological device design.

**MSN 526 Chemistry of Functional Surfaces and Interface Engineering**
Surface chemistry in nanosciences and nanotechnology. Physical, physicochemical and chemical properties of

MSN 533 Nanomaterials for Energy Conversation and Storage
A general overview to energy conversion and storage systems, potentials and thermodynamics of electrochemical cells, electrochemical methods, nanomaterials for electrochemical energy systems, dye sensitized solar cells, photocatalytic water splitting, proton exchange membrane fuel cells, direct methanol and solid oxide fuel cells, microbial fuel cells, hydrogen storage, supercapacitors, concepts in battery technology, lithium-ion batteries, next generation secondary batteries.

MSN 534 Polymeric Materials
Characterization of polymeric materials, structural analysis, surface and surface analysis (nuclear magnetic resonance, Raman, infrared, X-ray photoelectron spectroscopy, X-ray diffraction, electron and optical microscopy), thermal analysis (thermogravimetric differential scanning calorimetry), mechanical testing (tensile, dynamic mechanical analysis, rheological), molecular weight analysis (intrinsic viscosity, gel permeation chromatography).

MSN 541 Nanobiotechnology
Nanobiotechnology: lessons from nature; bioinformatics; materials at nanoscale; basic imaging techniques; biosensors; targeted drug delivery methods; biofilms; toxicity of nanotechnology products; use of nanotechnology in investigating basic cell biology; polymeric nanofibers.

MSN 551 Introduction to Micro and Nanofabrication
Introduction to conventional methods in macro and nanofabrication. Basics of film deposition techniques, optical and electron beam lithography, wet and dry etching methods, implantation and diffusion. Applications of microfabrication to CMOS fabrication and micro and nanoelectromechanical systems. Some non-conventional methods of micro and nanostructure fabrication.

MSN 555 Nanomaterials Processing by Intense Laser Beam
Fundamentals of laser materials interactions, laser ablation and thin film deposition, processing with ultrashort laser pulses, creating nanostructures with lasers, laser micro and nano machining, laboratory training and hand-on experiments.

MSN 591 Nanotechnology and Its Impacts on Socio-Economic Structures
Implications of nanotechnology on socio-economic structures; possible future scenarios; nanotechnology world economic trends; investments of various countries; nanotechnology, industry, business interactions; ethics, legal aspects; patent and intellectual property; national nanotechnology initiatives; world dynamics and decision systems, impacts on human life and society.

MSN 598 Seminar I
Seminars on state-of-the-art developments in the field of nanotechnology. Topics spanning computational nanoscience, nanobiotechnology, nanorobotics, bioengineering, nanophotonics, nanoelectronics and nanomaterials.

MSN 599 Master’s Thesis

MSN 698 Seminar II
Seminars on state-of-the-art developments in the field of nanotechnology. Topics spanning computational nanoscience, nanobiotechnology, nanorobotics, bioengineering, nanophotonics, nanoelectronics and nanomaterials.

MSN 699 Ph.D. Thesis

SAMPLE OF RECENT PUBLICATIONS


• S. Ayas, G. Bakan, A. Dana, “All-aluminum hierarchical plasmonic surfaces in the infrared”, Optical Materials Express, 6, 823-830 (2016)


• S. Ayas, G. Bakan, A. Dana, “Rounding corners of nano-square patches for multispectral plasmonic metamaterial absorbers”, Optics Express, 23, 11763-11770 (2015)


• S. Ayas, A. Cupullari, G. Bakan, H. Guner, A. Dana, “Exploiting Native Al203 fro Multispectral Aluminum Plasmonics”, Ac Photonics...(2014)


• A. Yeltik, S. Delikanli, M. Olutas, Y. Kelestemur, B. Guzelturk, H.V. Demir, “Experimental Determination of the Absorption Cross-Section and Molar Extinction Coefficient of Colloidal CdSe Nanoplatelets”, J of Physical Chemistry C (Forthcoming)

• B. Guzelturk, H.V. Demir, “Near-Field Energy Transfer Using Nanoemitters For Optoelectronics”, Advanced Functional Materials (Forthcoming)


- X. Zhao, Y. Gao, B. Zhu, H.V. Demir, S.J. Wang, H. Sun, “Exciton energy recycling from ZnO defect levels: towards electrically driven hybrid quantum-dot white light-emitting diodes”, Nanoscale, 8, 5835-5841 (2016)
- O. Akin, H.V. Demir, “Mid-wave infrared metasurface microlensed focal plane array for optical crosstalk suppression”, Optics Express, 23, 27020-27027 (2015)

• A. Celebioglu, F. Kayaci-Senirmak, S. Ipe, E. Durgun, T. Uyar; “Polymer-free nanofibers from vanillin/cyclodextrin inclusion complexes: high thermal stability, enhanced solubility and antioxidant property”, *Food and Function*, 7, 3141-3153 (2016)

• A. Celebioglu, H.S. Sen, E. Durgun, T. Uyar; “Molecular entrapment of volatile organic compounds (VOCs) by electrospun cyclodextrin nanofibers”, *Chemosphere*, 144, 736-744 (2016)


• E. Cihan, S. Ipe, E. Durgun, M.Z. Baykara; “Structural lubricity under ambient conditions”, *Nature Communications*, 7, 12055-1--6 (2016)


• Z. Isiksacan, O. Erel, C. Elbuen; “A portable microfluidic system for rapid measurement of the erythrocyte sedimentation rate”, *Lab on a Chip*, 16, 4682-4690 (2016)


• O.S. Caliskan, M.S. Ekiz, A.B. Tekinay, M.O. Guler, “Spatial Organization of Functional Groups on Bioactive Supramolecular Glycopeptide Nanofibers for Differentiation of MSCs to Brown Adipogenesis”, Bioconjugate Chemistry (Forthcoming)


• D. Mumcuoglu, M.S. Ekiz, G. Gunay, T. Tekinay, A.B. Tekinay, M.O. Guler, “Cellular Internalization of Therapeutic Oligonucleotides by Peptide Amphiphile Nanofibers and Nanospheres”, ACS Applied Materials & Interfaces, 8, 11280-12287 (2016)

• E. Arslan, M.O. Guler, A.B. Tekinay, “Glycosaminoglycan-Mimetic Signals Direct the Osteo/Chondrogenic Differentiation of Mesenchymal Stem Cells in a Three-Dimensional Peptide Nanofiber Extracellular Matrix Mimetic Environment”, Biomacromolecules, 17, 1280-1291 (2016)


• M.A. Khalily, G. Gulseren, A.B. Tekinay, M.O. Guler, “Biocompatible Supramolecular Catalytic One-Dimensional Nanofibers for Efficient Labeling of Live Cells”, Bioconjugate Chemistry (Forthcoming)

• Y. Loo, M. Goktas, A.B. Tekinay, M.O. Guler, C.A.E. Hauser, A. Mitraki, “Self-assembled proteins and peptides as scaffolds for tissue regeneration”, Advanced Healthcare Materials (Forthcoming)


• M. Sever, B. Mammadov, M.O. Guler, A.B. Tekinay, “Tenascin-C Mimetic Peptide Nanofibers Direct Stem Cell Differentiation to Osteogenic Lineage”, Biomacromolecules, 15, 4480-4487 (2014)


• V. Estrada, A.B. Tekinay, H.W. Muller, “Neural ECM mimetics”, Progress in Brain Research, 214, 391-413 (2014)


• M. Karaman, M. Rainhane, M.A. Tadelen, T. Uyar, M. Lahcini, M. Ilosouk, Y. Yagci, “Preparation of fluorinated methacrylate/clay nanocomposite via in-situ polymerization: Characterization, structure, and properties”, J of Polymer Science Part A- Polymer Chemistry (Forthcoming)


• A. Senthamizhan, B. Balusamy, Z. Aytaç, T. Uyar, “Grain boundary engineering in electrospun ZnO nanostructures as promising photocatalysts”, CrystEngComm, 18, 6341-6351 (2016)


• Y. Ertas, T. Uyar, “Cross-linked main-chain polyelephazacinone nanofibers by photo and thermal curing: stable at high temperatures and harsh acidic”, Polymer, 84, 72-80 (2016)


• A. Senthamizhan, A. Celebioglu, T. Uyar, “Flexible and highly stabel electrospun nanofibrous membrane incorporating gold nanocluster as a efficient probe for visual colorimetric detection of Hg(II)”, J of Materials Chemistry A, 2, 12717-12723 (2014)

• B.S. Munteanu, Z. Aytaç, G.M. Picote, T. Uyar, C. Vasilie, “Polylactic acid (PLA)/Silver-NP/VitaminE bionanocomposite electrospun nanofibers with antibacterial and antioxidant activity”, J of Nanoparticle Research, 16, 2643 (2014)


• S. Demirci, A. Celebioglu, T. Uyar, “Surface modification of electrospun cellulose acetate nanofibers via RAFT
polymerization for DNA adsorption", *Carbohydrate Polymers*, 113, 200-207 (2014)


- S. Vempati, T. Uyar, “Fluorescence from graphene oxide and the influence of ionic, π π interactions and heterointerfaces: electron or energy transfer dynamics”, *Physical Chemistry Chemical Physics*, 16, 21183-21203 (2014)


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**Faculty Profile:**

Dr. Hilmi Volkan Demir, Professor, Department of Physics

Hilmi Volkan Demir is the Director of UNAM-Institute of Materials Science and Nanotechnology. He received a Ph.D. from Stanford University in 2004. Dr. Demir has made scientific contributions in areas related to energy-saving LED lighting and displays, including high-quality semiconductor lighting and the color science of nanocrystal emitters, the understanding of their excitonic energy transfer processes, and their utilization in LED lighting. One breakthrough achieved by his research was the demonstration of a record-high photometric performance for LEDs. This work was reviewed in *Nano Today* and highlighted in a letter in *Nature Photonics*. Another was the fabrication of the largest freestanding nanocrystal membrane (>50cm×50cm) for LED color conversion achieved to date, which was reported in *Nano Letters*.

Over the years, Dr. Demir has secured a total of over 20 million USD in research funding as a principal investigator, and has earned a number of fellowships and international awards, including the Singapore NRF Fellowship and the EURYI Award. He is also a winner of the 2014 Nanyang Award for Research Excellence, and a recipient of the TUBITAK Incentive Award and the TUBA GEBİP Award. He has been recognized by the Junior Chamber International (JCI) with two Outstanding Young Person Awards, including the JCI international first prize for academic achievement and leadership.

His work has led to over 280 SCI journal publications, garnering over 6,000 citations, with a Hirsch index of 42 and an i10-index of 157, and more than 30 granted or pending patents. Dr. Demir has twice been highlighted in *Nature* as an example of a successful international scientist. He is a selected partner of the European Union FP7 Nanophotonics for Energy Network of Excellence (N4E NoE), and is currently serving as an editor for the SpringerBriefs series on Nanoscience and Nanotechnology and the Optical Society of America’s *Optics Express Journal*.  

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**Contact:**

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The aim of the Department of Mathematics graduate program is to develop students into mathematicians who can pursue original, creative research. The program emphasizes research in both pure and applied mathematics. At present, research in the graduate program is focused on algebra, algebraic geometry, algebraic topology, number theory, complex analysis, functional analysis, dynamical systems, nonlinear differential equations, and general relativity.

**FACULTY**


**MATTHEW GELVIN**, Visiting Assistant Professor. Ph.D., Mathematics, Massachusetts Institute of Technology, 2010. Algebraic topology, fusion systems, local group theory.


**AHMET MUHTAR GÜLOĞLU**, Assistant Professor. Ph.D., Mathematics, Ohio State University, 2005. Analytic number theory, automorphic forms.

**METİN GÜRSES**, Professor. Ph.D., Physics, Middle East Technical University, 1975. General relativity, string theory, integrable systems, partial differential equations.


**ANARGYROS KATSAMPEKIS**, Instructor. Ph.D., Mathematics, University of Ioannina 2006. Commutative algebra, algebraic geometry, algebraic combinatorics and graph theory.


**YOSUM KURTULMAZ**, Instructor. Ph.D., Mathematics, Middle East Technical University, 1998. Ring theory, number theory, formal concept analysis.


**MÜFİT SEZER**, Associate Professor. Ph.D., Mathematics, Purdue University, 2003. Invariant theory, commutative algebra.


**BÜLENT ÜNAL**, Associate Professor. Ph.D., Mathematics, University of Missouri, 2000. Differential geometry, Riemannian geometry, pseudo-Riemannian geometry and Lorentzian geometry, global analysis on manifolds, general relativity and quantum field theories.


ERGÜN YALÇIN, Professor. Ph.D., Mathematics, University of Wisconsin Madison, 1998. Cohomology of groups, finite group actions on topological spaces, geometric structures associated to groups.


MASTER OF SCIENCE IN MATHEMATICS

Admission: All applicants are required to have a B.S. degree in mathematics or a related field of science or engineering. Students with a B.S. degree in an area other than mathematics may be required to take certain undergraduate courses in order to acquire the necessary background in the field. Evaluation of applicants is based on their ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı/Academic Personnel and Postgraduate Education Entrance Examination) scores, past academic records, reference letters, and an interview. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of another country may take the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of satisfactory knowledge of English.

Degree Requirements: In addition to completing at least 21 credit units of course work, the M.S. degree candidate must prepare and successfully defend a thesis. The expected duration of study for the M.S. degree is 4 semesters; the maximum duration is 6 semesters.

DOCTOR OF PHILOSOPHY IN MATHEMATICS

Admission: All applicants are required to have a B.S. degree in mathematics or a related field of science or engineering. Evaluation of applicants is based on their ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı/Academic Personnel and Postgraduate Education Entrance Examination) scores, past academic records, reference letters, and an interview. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of another country may take the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of satisfactory knowledge of English.

Degree Requirements: The completion of 21 credit units of course work beyond the M.S. level is required. Ph.D. candidates must pass a qualifying exam, typically in their fourth semester, and then must prepare a dissertation proposal. Preparation and defense of a dissertation based on original research is the centerpiece of the program. The standard duration of study for the Ph.D. degree is 8 semesters for students who enter the program with an M.S. degree; the maximum duration is 12 semesters.

COURSE DESCRIPTIONS

MATH 500 Mathematical Analysis

MATH 501 Real Analysis I

MATH 502 Real Analysis II

MATH 503 Complex Analysis I

MATH 504 Complex Analysis II

MATH 505 Introduction to Complex Geometry
Vector bundles. Sheaf theory and sheaf cohomology. Kahler manifolds. Chow rings. Lefschetz (1,1)-theorem. The hodge conjecture, i.e. the (p,p) version of Lefschetz’s theorem.

MATH 506 Introduction to Potential Theory

MATH 507 Algebra I
Category-theoretic language. Review of groups, rings, modules. Applications of Zorn’s Lemma, including the algebraic closure of a field. Galois theory.

MATH 508 Algebra II

MATH 525 Group Representations

**MATH 611 Algebraic Topology I**
Categories and functors, homotopy of paths, homotopy of maps, fundamental groups, higher homotopy groups, homology of complexes, chain homotopy, standard simplices, the singular complex, singular homology, excision theorem, Mayer-Vietoris sequences, applications of homology.

**MATH 612 Fibre Bundles I**
Fibrations, fiber bundles, classifying spaces and classifying maps, characteristic classes (both ordinary and extraordinary), vector bundles, Schubert calculus, classical characteristic classes of vector bundles, the Thom isomorphism, the topological Riemann-Roch theorem, applications to manifolds (embeddings to Euclidean spaces, Wu's formulas, divisibility theorems, etc.)

**MATH 624 Compact Lie Groups**

**MATH 625 Homological Algebra**
The course starts with standard material on homological algebra and continues with a special interest topic with instructor's consent such as special applications and calculations in algebraic topology, algebraic geometry or cohomology of groups. The standard part includes material on modules, categories, extensions of modules, derived functors and spectral sequences.

**MATH 626 Cohomology of Groups**

**MATH 630 Commutative Algebra**
We introduce the basic concepts of dimension theory and study Noether normalization and system of parameters. We introduce Koszul complex and some other depth measuring techniques. Cohen-Macaulay and regular rings are also studied. We review some important foundational theorems in the area such as Hilbert Syzygy theorem and Auslander-Buchsbaum formula.

**MATH 631 Topics in Commutative Algebra**
The main goal of the course is to develop an understanding of basic concepts of syzygies and Hilbert functions. We start with graded rings and modules their graded free resolutions. After the introduction of Betti numbers we consider Eliahou-Kervaire resolution and its applications. Basic properties Hilbert functions and its extremal properties are also covered. In this context we also study Lex and Gotzmann ideals and Macaulay's theorem.

**MATH 633 Transcendental Algebra**
Transcendental algebra. Complex algebraic varieties, line bundles and divisors, Riemann surfaces as algebraic curves, Hurwitz's theorem, Riemann-Roch theorem, uniformization, surfaces, Kodaira dimension, main classification theory of surfaces via birational theory, Chern classes, fixed point theorems, residues, spectral sequences.

**MATH 645 Riemannian Geometry I**

**MATH 646 Riemannian Geometry II**

**MATH 653 Introduction to Analytical Number Theory**
Primes in an arithmetic progression; Gauss' sum; primitive characters; Dirichlet's class number formula; the distribution of the primes; Riemann's zeta-function and Dirichlet L-functions; Explicit formulae and prime number theorems; the large sieve and Bombieri-Vinogradov theorem.

**MATH 654 Analytic Number Theory**
Integer points, trigonometric sums, infinite products, entire functions, the gamma function, the Riemann zeta-function, zeros of the zeta-function, the prime number theorem, Dirichlet-functions, primes in arithmetic progressions, the circle method, the Goldbach conjecture, Waring's problem.

**SAMPLE OF RECENT PUBLICATIONS**
- L. Barker, I. Tuvay, "A refinement of Alperin's conjecture for blocks of the endomorphism algebra of the Sylow permutation module", Archiv der Mathematik (Forthcoming)
- L. Barker, "Blocks of Mackey categories", J of Algebra, 446, 34-57 (2016)
- A. Degtyarev, I. Itenberg, A.S. Sertoz, "Lines on quartic surfaces", Mathematische Annalen (Forthcoming)


• E. Yalcin, “Equivariant Moore Spaces and the Dade Group”, Advances in Mathematics (Forthcoming)

• I. Hambleton, E. Yalcin, “Group actions on spheres with rank one prime power isotropy”, Mathematical Research Letters (Forthcoming)


• S. Pamuk, E. Yalcin, “Relative group cohomology and the orbit category”, Communications in Algebra, 42, 3220-3243 (2014)


Faculty Profile:
Dr. Müfit Sezer,
Associate Professor
Department of Mathematics

Müfit Sezer received a B.S. degree in electrical engineering and mathematics from Boğaziçi University in 1994 and a Ph.D. in mathematics from Purdue University (USA) in 2003. Following this, he worked as a postdoctoral research associate at the University of Kent in Canterbury (UK). He held positions at Texas Tech University and Boğaziçi University before joining the Bilkent University Department of Mathematics in 2007. In the spring of 2014 he was a Fulbright Senior Scholar at the University of Nebraska.

Dr. Sezer’s research interests include combinatorial and computational commutative algebra, invariant theory, and symbolic computation. He has, as principal investigator, directed several TÜBİTAK-funded research projects related to various aspects of his research interests. He has published papers in journals including Advances in Mathematics, Transactions of the American Mathematical Society, the Journal of Algebra, and Mathematische Annalen. He received the Turkish Academy of Sciences Distinguished Young Researcher Award in 2010, the Sedat Simavi Science Award in 2011 and the Önder Öztunalı Science Award in 2014.

Faculty Profile:
Dr. Fatihcan Atay,
Visiting Professor,
Department of Mathematics

Fatihcan Atay received a Ph.D. in applied mathematics from Brown University in 1994. He subsequently served on the faculty at Koç University and also gained several years of industrial experience at Artesis Technological Systems as a senior research scientist. From 2002 to 2016 he was with the Max Planck Institute for Mathematics in the Sciences in Leipzig, where he coordinated a research group on dynamical systems and network analysis. He joined Bilkent University in 2016 as chair of the Department of Mathematics.

Dr. Atay is a senior member of the Center for Dynamics at the Technical University of Dresden, and convenor of a five-year cooperative program on Discrete and Continuous Models in the Theory of Networks at the Center for Interdisciplinary Research of Bielefeld University (Germany). He is on the editorial boards of Frontiers in Applied Mathematics and Statistics and the Springer book series Advances in Delays and Dynamics. His research is in the areas of nonlinear dynamical systems, delay differential equations, complex systems and network theory, difference equations, systems and control theory, mathematical neuroscience, and applications of mathematics.
The graduate programs in the Department of Molecular Biology and Genetics are designed to provide an excellent background in basic and applied research areas of the field. The main research activities of the department are in the areas of molecular genetics (genetic predisposition to cancer, tumor suppressor genes, gene-disease associations), molecular biology (regulation of transcription, differential expression, epigenetics), molecular cell biology (cell cycle, apoptosis, signal transduction), immunology, bioinformatics, neurophysiology, and metabolic diseases. The medium of instruction is English.

**FACULTY**


**ÇAĞLAR ÇEKİÇ**, Assistant Professor, Ph.D., Immunology, University of Louisville, 2009. Cancer Immunotherapy, vaccine adjuvants, adaptive immune responses and inflammation.

**ONUR ÇİZMEÇIOĞLU**, Assistant Professor, Ph.D., Cell Biology, University of Heidelberg and German Cancer Research Center, 2009. Cancer therapy, mitogenic signaling pathways, prostate cancer, cancer drug resistance, cell cycle, centrosome duplication.


**SERKAN İSMİL GÖKTUNA**, Assistant Professor. Ph.D., Human Biology, Technical University of Munich 2010. Cancer Biology, Tumor Immunology, Colorectal Cancer, Tumor Microenvironment, Inflammatory Bowel Diseases.


**İHSAN GÜRSEL**, Professor. Ph.D., Biomaterials and Biology, Middle East Technical University, 1995. Innate immunity, immunotherapy, drug delivery, biomaterials, biotechnology.


**TAYFUN ÖZÇELİK**, Professor and Dean. M.D., Istanbul University, 1986. Human molecular genetics, somatic cell genetics, gene mapping, mutation analysis, identification of disease genes, DNA-based diagnosis.


**MASTER OF SCIENCE IN MOLECULAR BIOLOGY AND GENETICS**

**Admission:** All applicants are required to have a B.S. degree in molecular biology and genetics, biology, or a related field of science or engineering. Students with a B.S. degree in chemistry, chemical engineering, physics, or a related field may also apply; however, such students may be required to take certain undergraduate courses in molecular biology and genetics in order to acquire the necessary background in the field. Evaluation of applicants is based on their ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı / Academic Personnel and Postgraduate Education Entrance Examination) scores, past academic records, reference letters, and an interview. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of another country may take the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of satisfactory knowledge of English.

**Degree Requirements:** In addition to completing at least 21 credit units of course work, the M.S. degree candidate must prepare and successfully defend a thesis. The expected duration of study for the M.S. degree is 4 semesters; the maximum duration is 6 semesters.

**DOCTOR OF PHILOSOPHY IN MOLECULAR BIOLOGY AND GENETICS**

**Admission:** All applicants are required to have a B.S. degree in molecular biology and genetics or in biology. Holders of related professional degrees, such as the M.D. or D.V.M., may also apply. Evaluation of applicants is based on their ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı / Academic Personnel and Postgraduate Education Entrance Examination) scores, past academic records, reference letters, and an interview. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of another country may take the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of satisfactory knowledge of English.

**Degree Requirements:** In addition to completing at least 21 credit units of course work, the M.S. degree candidate must prepare and successfully defend a thesis. The expected duration of study for the M.S. degree is 4 semesters; the maximum duration is 6 semesters.
Academic Personnel and Postgraduate Education Entrance Examination) scores, past academic records, reference letters, and an interview. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of another country may take the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of satisfactory knowledge of English.

Degree Requirements: The completion of 21 credit units of course work beyond the M.S. level is required. Ph.D. candidates must pass a qualifying exam, typically in their fourth semester, and then must prepare a dissertation proposal. Preparation and defense of a dissertation based on original research is the centerpiece of the program. The standard duration of study for the Ph.D. degree is 8 semesters for students who enter the program with an M.S. degree; the maximum duration is 12 semesters.

COURSE DESCRIPTIONS

MBG 502 Advanced Cellular Biology
Cell structure and function, the cytoskeleton, intracellular compartments, vesicular trafficking, the cell-division cycle, cell junctions, cell adhesion, extracellular matrix and development.

MBG 503 Advanced Molecular Biology
Chromosomal DNA and its packaging, higher-order organization of chromosomes, replication, recombination. Transcription and regulation chromatin modifying and remodeling complexes DNA repair, RNA splicing.

MBG 505 Advanced Molecular Genetics
Organization of the genome, Mendelian and non-Mendelian inheritance, mitochondrial genome, mutigene families and repetitive DNA, polymorphism and polymorphic markers, genetic mapping, physical mapping, models of studying gene structure and function.

MBG 509 Special Topics in Molecular Biology I
MBG 510 Special Topics in Molecular Biology II
Current topics in molecular biology, comprehensive reading, critical evaluations of scientific references, seminar presentations and class participation.

MBG 511 Basic Protocols in Molecular Biology
Basic techniques widely used in molecular biology and genetics will be discussed.

MBG 513 Bioinformatics
Commonly used databases in molecular biology, genetics and related fields, homology search for genes and proteins, primer design, molecular operations, restriction mapping, structure prediction.

MBG 514 Stem Cell Biology
The basic features of stem cell biology including concepts like self renewal, biological niches and differentiation. Derivation, manipulation, and differentiation of embryonic, adult, cancer stem cells in both mice and humans. Reproductive and therapeutic cloning. Existing as well as potential clinical applications and ethic considerations of stem cell therapy.

MBG 515 Principles of Protein Structure
Principles of protein structure, with examples of key proteins in their biological context. Discussions of selected research papers.

MBG 516 Biomolecules, Biomaterials and Bioprocesses
Basic biomolecules (from simple molecules such as aminoacids to macro molecules such as proteins and DNA) and principles of biology from material science perspective. This course must be a core course given very early in the curriculum.

MBG 517 Computational Biology
Sequence analysis, comparative genomics and phylogenetics, expression analysis, and systems biology.

MBG 522 Recent Developments in Cellular Biology
Recent developments in cellular structure and function, intracellular trafficking, cytoskeleton, cell adhesion, extracellular matrix and development. Related selected articles from leading journals will be discussed during the course.

MBG 523 Recent Developments in Molecular Biology
Latest developments and emerging issues in molecular biology including transcriptomics, proteomics, cancer biomarker, targeted therapy, epigenetics, RNA world. The selected articles from the periodical journals will be chosen to discuss the topics.

MBG 599 Master's Thesis

MBG 601 Human Genetics
Molecular genetics of human diseases, chromosomal abnormalities, biochemical genetics, genetic basis of cancer, genome projects, molecular medicine, genetic counseling, DNA based diagnostics, population genetics.

MBG 602 Molecular and Cellular Immunology
Basic elements of the immune system, molecular biology of antigen recognition, B and T lymphocytes, cellular and genetic basis of immunity, regulation and development of the immune system, immune system deficiencies in humans, vaccination and adaptive immunotherapy.

MBG 603 Molecular Bases of Cancer
Cancer as a multi-gene disease, oncogenes, tumor suppressor genes, mutator genes, gene therapy of cancer, germ-line and somatic mutations and cancer; genes involved in abnormal proliferation and metastatic behavior of cancer cells, immune response to cancer, familial cancers, virus-induced cancers.

MBG 607 Gene Therapy
Current topics in human somatic cell gene therapy, viral and nonviral gene transfer techniques, gene therapy applications in hereditary and acquired diseases, ethical issues in genetic modification of humans.

MBG 608 Principles of Gene Expression
Mechanisms of transcription, chromatin modifying and remodeling complexes, regulation of tissue specific gene expression, consequences of gene expression deregulation.

MBG 612 Special Topics in Genetics I
MBG 613 Special Topics in Genetics II
Current topics in molecular genetics, comprehensive reading, critical evaluation of scientific literature, seminar presentations and class participation.

MBG 614 Advanced Protocols in Molecular Biology
Hands-on experiments with a number of advanced protocols used in molecular biology (gene cloning, gene expression, purification of expressed proteins, western blotting, etc.)

MBG 615 Recent Advances in Molecular Biology
Latest developments and emerging issues on cancer, cell-cell interactions, extracellular matrix.

MBG 616 Experimental Molecular Biology and Genetics I
MBG 617 Experimental Molecular Biology and Genetics II
An introduction to basic molecular biology and genetics techniques. The student spends a half semester with one of the research groups and participates in some aspects of the research being pursued by the faculty member.
MBG 618 Advanced Developmental Biology
The concepts of development in a variety of organisms. Molecular mechanisms of embryonic development in model organisms. Early development, developmental abnormalities. The correlation between the expression and function of gene and cell fate and tissue interactions. Discussion of classic and current research articles.

MBG 619 Advanced Membrane Biology
Molecular structures of biological membranes, translocation and topogenesis of proteins in cell membrane with particular emphasis on translocation of solute transporters, structure-function relationships in membrane transporters, regulatory mechanisms controlling transporter expression and function in prokaryotes and in eukaryotes.

MBG 620 Cell Proliferation and Death
Molecular mechanisms that govern cell proliferation and programmed cell death, role of both processes in the development and homeostasis of multicellular organisms, aberrations of cell proliferation and apoptosis in diseases including cancer and degenerative diseases.

MBG 622 Recent Developments in Immunology
Signaling pathways involved in the ontogeny of immune effector cells; Activation of T and B lymphocytes; Regulation of adaptive immunity by the innate immune system; Immune evasion of virally infected and tumoral cells; Immunity in diseases; Therapeutic approaches based on the manipulation of immune system. Topics will be discussed through the articles published in the leading journals of the field.

MBG 623 Seminars in Molecular Genetics I
MBG 624 Seminars in Molecular Genetics II
The course will be based on class presentations and discussions of novel concepts in Molecular Biology and Genetics. Articles selected by the staff will be introduced and discussed with the students in the form of paper presentations and seminars. Students will carry out a critical analysis of novel as well as milestone “classical” articles in the field of Molecular Biology and Genetics.

MBG 699 Ph.D. Dissertation

SAMPLE OF RECENT PUBLICATIONS

- C. Cekic, J. Linden, “Purinergic regulation of the immune system”, Nature Reviews Immunology, 16, 177-192 (2016)


- G. Karahan, N. Sayar, G. Gozum, O. Konu, I. Yulug, "Relative expression of rRNA species and 45S rDNA promoter methylation status are dysregulated in tumors in comparison with adjacent normals in breast cancer", Oncology Reports, 33, 3131-3145 (2015)


- Chia-Chi Chang, Chenyu Zhang, Qingling Zhang, O. Sahin, H. Wang, J. Wu, Y. Xiao, J. Zhang, Sumayyah K. Rehman, Ping Li, Mien-Chie Hung, Fariba Behbod, Dihua Yu, "Upregulation of lactate dehydrogenase a by 14-3-3 leads to increased glycolysis critical for breast cancer initiation and progression", Oncotarget, 7, 35270-35283 (2016)


• Y. Oztemur, T. Bekmez, A. Aydos, I. Yulug, B. Bozkurt, B. Gur-Dedeoglu, “A ranking-based meta-analysis reveals let-7 miRNAs as a meta-signature for grade classification in breast cancer”, *Plos One* (Forthcoming)

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**Faculty Profile:**

**Dr. Ali Osmay Güre**,

**Associate Professor,**

**Department of Molecular Biology and Genetics**

Dr. Ali Osmay Güre is a medical doctor (University of Ankara) as well as a molecular immunologist (Cornell University Graduate School of Medical Sciences). He was a postdoctoral fellow at the Memorial Sloan Kettering Research Center and the Department of Pathology of the Weill Cornell Medical College in NYC from 1995 to 2000. From 2000 to 2006, he was an assistant member at the New York branch of the Ludwig Institute for Cancer Research, where he worked on tumor antigen discovery, with an emphasis on the regulation of cancer-testis (CT) gene expression in cancer, and the clinical relevance of these genes as biomarkers of disease. He joined the Bilkent University Department of Molecular Biology and Genetics in 2006.

Since then, the focus of Dr. Güre’s group has developed to encompass the in silico discovery and the in vitro and ex vivo validation of biomarkers of clinical outcome and drug sensitivity in cancer, primarily colon cancer, gastric cancer, triple-negative breast cancer, and melanoma. He is also involved in the identification of diagnostic biomarkers, especially for lung cancer and mesothelioma. In addition, his group is investigating the molecular basis of EMT and how this relates to CT gene expression, as well as identifying potentially new strategies for drug repositioning based on the use of these two groups of biomarkers.

Dr. Güre is a partner in Poyraz Biotech Ltd., an SME founded by his students that focuses on the large-scale validation of clinically relevant tumor biomarkers. He is a co-inventor in more than 25 international patents related to tumor antigens/biomarkers. His research has been supported by the European Commission, the Ludwig Institute for Cancer Research, the Cancer Research Institute (USA), and the Turkish Scientific and Medical Council. He currently holds a grant from the Ministry of Science and Technology of Turkey for research related to the identification of treatment strategies for triple-negative breast cancer.
Program Director: Dr. Michelle M. Adams, Associate Professor

The Neuroscience graduate programs are designed to provide an excellent background in basic and applied research areas of cellular, developmental, and systems neuroscience. The main research activities of the department focus on the genetic basis of neurological disorders, the molecular and cellular causes of brain aging that alter memory, how neuronal activity controls behavior in normal and disease models, understanding the sensory and motor systems and other cognitive functions, and assessing the structural and functional architecture of the human brain as influenced by genetically rooted nervous system disorders.

FACULTY

This program comprises faculty members from different fields including Psychology, Molecular Biology and Genetics, Physics, Electrical and Electronics Engineering, and Computer Engineering, reflecting an interdisciplinary approach.

MASTER OF SCIENCE IN NEUROSCIENCE

Admission: All applicants are required to have an undergraduate degree in life sciences, medicine, biology, or a related field of science or engineering. Students with an undergraduate degree in chemistry, engineering, physics, psychology, or another related field may be required to take certain undergraduate courses related to the life sciences in order to acquire the necessary background in the field. Evaluation of applicants is based on their ALES (Akademik Personel ve Lisansüstü Eğitimi Girişi Sınavı/Academic Personnel and Postgraduate Education Entrance Examination) scores, past academic records, reference letters, and an interview. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of another country may take the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of satisfactory knowledge of English.

Degree Requirements: In addition to completing at least 21 credit units of course work, the M.S. degree candidate must prepare and successfully defend a thesis. The expected duration of study for the M.S. degree is 4 semesters; the maximum duration is 6 semesters.

DOCTOR OF PHILOSOPHY IN NEUROSCIENCE

Admission: All applicants are required to have an undergraduate degree in life sciences, medicine, biology, or a related field of science or engineering. Students with an undergraduate degree in chemistry, engineering, physics, psychology, or another related field may be required to take certain undergraduate courses related to the life sciences in order to acquire the necessary background in the field. Evaluation of applicants is based on their ALES (Akademik Personel ve Lisansüstü Eğitimi Girişi Sınavı/Academic Personnel and Postgraduate Education Entrance Examination) scores, past academic records, reference letters, and an interview. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of another country may take the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of satisfactory knowledge of English.

Degree Requirements: The completion of 21 credit units of course work beyond the M.S. level or 42 credits of course work beyond the undergraduate level is required. Ph.D. candidates must pass a qualifying exam, typically in their fourth semester, and then must prepare a dissertation proposal. Preparation and defense of a dissertation based on original research is the centerpiece of the program. The expected duration of study for the Ph.D. degree is 8 semesters for students who enter the program with an M.S. degree, and 10 semesters for those who enter with a B.S. degree. The maximum durations are 12 and 14 semesters, respectively.

COURSE DESCRIPTIONS

NSC 510 Sensory and Motor Systems Neuroscience
Neural regulation of sensory and motor systems. Functions such as vision, audition, olfaction, gustation, motor movement, reproduction, sleep and biological rhythms, emotion, learning and memory and psychopathology.

NSC 511 Cellular, Molecular and Developmental Neuroscience
The fundamental principles underlying neuronal biophysics; molecular, cellular and developmental processes. Cellular components of nervous tissue, membrane and action potentials, neurotransmitter regulation and intracellular signaling, neural induction and pattern formation, neurogenesis, migration and synaptic regulation.

NSC 512 Research Methods in Neuroscience

NSC 513 Behavioural Neuroscience
Seminar course in which students read a wide range of articles that relate to the overview of the neurological processes underlying organismic behavior. Survey on neurobiological explanations of topics such as sensation, movement, motivation, emotion, sleep, learning, neurological disorders, and recovery mechanisms.
NSC 514 Affective Neuroscience
Biological basis of emotion. Overview of and historical basis for the field of affective neuroscience. Mapping affective experience and behavior to brain function, including cross-level integration of anatomical, chemical, and electrical data.

NSC 515 Computational and Numerical Methods in Neuroscience
Basic mathematical techniques for analysis and modeling of neural systems. Various methods in this highly active field are discussed.

NSC 516 Neurobiology of Aging
Biological basis of aging and neurodegenerative disease. Current cellular and brain imaging tools as they relate to understanding the aging and neurodegenerative disease process. Recent advances in research techniques related to aging and neurodegenerative disease.

NSC 546 Computing for Neuroscience
Experimental design and control in systems neuroscience, basics of signal processing, generating images, movies and sounds, basics of optimization and curve fitting, functions for statistical testing and bootstrapping, use of Matlab programming for neural signal processing, signal detection theory, receiver operating characteristic (ROC) analysis.

NSC 591 Pro-thesis Seminar I
Presentations on the current and classical literature.

NSC 599 Neuroscience Master’s Thesis

NSC 612 Selected Topics in Neurosciences I
Current topics in neuroscience. Survey of the literature related to a current selected topic of interest.

NSC 613 Selected Topics in Neurosciences II

NSC 670 Lab in Cellular, Molecular, and Developmental Neuroscience
Experimental approaches in cellular, molecular, and developmental neuroscience. Experiments on cell structure and organization of the vertebrate central nervous system, and mechanisms underlying neural signaling and plasticity. Laboratory instruction in anatomical, physiological, and biochemical methods for investigating the biology of nerve cells.

NSC 671 Lab in Sensory and Motor Systems Neuroscience
Experimental approaches in sensory and motor systems neuroscience. Laboratory instruction in neuroanatomy, sensory neurophysiology, modern neuroanatomical tracer techniques, psychophysics, and computational neuroscience.

NSC 691 Pro-thesis Seminar II
Presentations on the current and classical literature.

NSC 699 Neuroscience Ph.D. Dissertation

SAMPLE OF RECENT PUBLICATIONS


- J.E. Corbett, “The Whole Warps the Sum of Its Parts: Gestalt-Defined-Group Mean Size Biases Memory for Individual Objects,” Psychological Science (Forthcoming)

- J.E. Corbett, P.Venuti, D. Melcher, “Perceptual Averaging in Individuals with Autism Spectrum Disorder,” Frontiers in Psychology (Forthcoming)

- E. Ilicak, L.K. Senel, E. Biyik, T. Cukur, “Profile-Encoding Reconstruction for Multiple Acquisition Balanced Steady-Staete Free Precession Imaging,” Magnetic Resonance in Medicine, n/a–n/a (2016)


• A. Khatibi, “Be precise and suffer less pain! A comment on “A brief intervention utilising visual feedback reduces pain and enhances tactile acuity in CLBP patients,” J of Back and Musculoskeletal Rehabilitation, (Forthcoming)


• K. Thangavel, E.U. Saritas, “Aqueous paramagnetic solutions for MRI phantoms at 3 T: A detailed study on relaxivities,” Turkish J of Electrical Engineering & Computer Sciences, (Forthcoming)

• M. Utkur, Y. Muslu, E.U. Saritas, “Relaxation-based viscosity mapping for magnetic particle imaging,” Physics in Medicine and Biology, (Forthcoming)


Contact:
Dr. Michelle M. Adams
(Program Director)
Phone : +90 312 290 3415
Fax : +90 312 290 2561
michelle@bilkent.edu.tr

Faculty Profile:
Dr. Michelle M. Adams,
Associate Professor,
Department of Psychology

Michelle M. Adams received a Ph.D. in neuroscience from the New York University-Mount Sinai School of Medicine in 2001. Her doctoral work focused on the relationships among brain aging, cognitive decline, estrogen, and glutamate receptors. After completing her Ph.D., Dr. Adams worked in the Howard Hughes Medical Institute at the Massachusetts Institute of Technology examining the functional consequences of altering glutamate receptor levels. In 2004, she went to the Neurobiology and Anatomy Department at the Wake Forest University School of Medicine to the study the effects of aging and caloric restriction on synaptic glutamate receptors. In 2005 she became an assistant professor at Wake Forest University and in 2009 joined the Bilkent University Department of Psychology, where she became an associate professor in 2013. Dr. Adams served as the acting chair of Psychology from August 2012 until October 2013, and currently holds the position of director of the Neuroscience program.

Her research is centered on the synaptic changes and cellular mechanisms underlying age-related cognitive decline and the potential of interventions such as caloric restriction to alter the course of brain aging. Her work has been awarded research grants by the National Institutes of Health in the United States and by TUBITAK in Turkey. In 2011 she was awarded an installation grant by the European Molecular Biology Organization; she is a participant in the organization’s Young Investigator program. Dr. Adams has published over 30 papers, and her work has received over three thousand citations.
The goal of the graduate program in the Department of Physics is to develop students into scientists who can pursue original, creative research activities. The program is an important part of the research activity of the department, which aims to produce scientific output of international significance. The graduate program emphasizes research in various fields of condensed matter physics, in relation to rapidly developing high-technology fields such as photonics, nanoscience, and nanotechnology. The department's current research focuses on the physics of electrons in lower dimensionalities, nanoscience, statistical mechanics, many-body physics, strongly correlated electrons, properties of new materials, fabrication and theoretical analysis of new devices, computational physics, ultrafast optics, and soft condensed matter.

**FACULTY**

**SERAP AKSU**, Assistant Professor, Ph.D., Materials Science and Engineering, Boston University, 2013. Biophotonics, opto fluids, optical antennas.

**CEYHUN BULUTAY**, Associate Professor, Ph.D., Electrical Engineering, Middle East Technical University, 1997. Condensed Matter Theory, computational semiconductor physics, quantum optics.

**ŞAHİN BÜYÜKDAĞLI**, Assistant Professor, Ph.D., University Joseph Fourier, 2007. Statistical physics of charged and polar liquids, ion channels, electrostatics of polymer translocation, statistical physics of DNA melting, critical phenomena, biophysical modelling.

**SALIM ÇIRACI**, Professor, Ph.D., Condensed Matter Physics, Stanford University, 1974. Nanomaterials, nanodevices, hydrogen storage, surface physics, electronic structures of solids, electron systems of lower dimensionality, mesoscopic physics, scanning tunneling and atomic force microscopy, chemisorption theory, metallization, strained semiconductor superlattices.


**ATİLLA ERÇELEBİ**, Professor, Ph.D., Condensed Matter Physics, Middle East Technical University, 1980. Polaron, electron-phonon interactions, excitons, low dimensional quantum well-heterostructure-type semiconducting systems.

**AHMET GÖKALP**, Senior Lecturer, Ph.D., Nuclear Physics, Stanford University, 1980. Radiative vector meson decays, QCD sum rules in phenomenological high energy physics, nuclear transport theory and nuclear many-body dynamics with applications to giant resonances, nuclear collisions, and nuclear fusion.

**OĞUZ GÜLSEREN**, Professor and Department Chair, Ph.D., Condensed Matter Physics, Bilkent University, 1992. Theoretical solid state physics, nanoscience, metal nanowires, carbon nanotubes, self organization, self assembly.

**BALAZS HETENYI**, Assistant Professor, Ph.D., Chemical Physics, Columbia University, 1999. Strongly correlated systems, density functional theory, computational physics, Monte Carlo and molecular dynamics methods.

**FATİH ÖMER İLDAY**, Associate Professor, Ph.D., Cornell University, 2003. Non-linear optics ultrafast optical phenomena.

**COŞKUN KOCABAŞ**, Associate Professor, Ph.D., Physics, University of Illinois at Urbana-Champaign, 2007. Chemical communication, soft robotics, high performance flexible microelectronics, unconventional electronic materials, electron transport in low dimensional systems, hierarchical assembly of low dimensional structures: micro and nano fabrication optofluids, lab-on-a-chip systems, carbon based electronics.

**MEHMET ÖZGÜR OKTEL**, Associate Professor, Ph.D., Physics, Massachusetts Institute of Technology, 2000. Theoretical condensed matter physics, atomic physics.


**GIOVANNI VOLPE**, Assistant Professor, Ph.D., ICFO-The Institute of Photonic Sciences, 2008. Soft matter, optical tweezers and optical manipulation, nanoscopic force measurement, statistical physics, microscopic swimmers, active Brownian motion, stochastic differential equations, multiplicative noise.


**MASTER OF SCIENCE IN PHYSICS**

Admission: Applicants are required to have a B.S. degree in physics or a related field of science or engineering. Students with a B.S. degree in an area other than physics may be required to take certain undergraduate courses
in order to acquire the necessary background in the field. Evaluation of applicants is based on their ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı/Academic Personnel and Postgraduate Education Entrance Examination) scores, past academic records, reference letters, and an interview. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of another country may take the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of satisfactory knowledge of English.

Degree Requirements: In addition to completing at least 21 credit units of course work, the M.S. degree candidate must prepare and successfully defend a thesis. The expected duration of study for the M.S. degree is 4 semesters; the maximum duration is 6 semesters.

DOCTOR OF PHILOSOPHY IN PHYSICS

Admission: All applicants are required to have a B.S. degree in physics or a related field of science or engineering. Evaluation of applicants is based on their ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı/Academic Personnel and Postgraduate Education Entrance Examination) scores, past academic records, reference letters, and an interview. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of another country may take the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of satisfactory knowledge of English.

Degree Requirements: The completion of 21 credit units of course work beyond the M.S. level is required. Ph.D. candidates must pass a qualifying exam, typically in their fourth semester, and then must prepare a dissertation proposal. Preparation and defense of a dissertation based on original research is the centerpiece of the program. The standard duration of study for the Ph.D. degree is 8 semesters for students who enter the program with an M.S. degree; the maximum duration is 12 semesters.

COURSE DESCRIPTIONS

PHYS 515 Advanced Optics
Photon and wave pictures of electromagnetic radiation. Huygen's principle, interference and interferometry, far-field and near-field diffraction, coherence, polarization, ray optics and optical resonators with ABCD matrix formalism. Selected modern topics such as fiber optics, optical communications, lasers, electro-optic modulation and nonlinear optics are discussed.

PHYS 520 Nanoscience and Nanotechnology I

PHYS 522 Self-Organized and Self-Assembled Systems from Nanoscience to Biotechnology
Introduction to self-assembly and self-organization. Static/dissipative self-assembly/self-organization. Colloidal self-assembly/self-organization. Dynamics of nonlinear systems and far-from-equilibrium thermodynamic systems. Recent developments and state of the art examples ranging from nanoscience to computer science, to economy, finally to biotechnology.

PHYS 538 Atomic molecular and optical physics
One- and multi-electron atoms; atoms in classical static and AC fields; diatomic molecules; molecules in external fields; quantization of electromagnetic field; mode expansion of quantized light; coupling of two-level systems with light; electromagnetically-induced transparency; coherent control of matter with light.

PHYS 541 Electromagnetic Theory I

PHYS 542 Electromagnetic Theory II

PHYS 543 Advanced Quantum Mechanics I

PHYS 544 Advanced Quantum Mechanics II
Approximation methods, many particle systems, scattering theory, second quantization.

PHYS 545 Solid State Theory I

PHYS 546 Solid State Theory II

PHYS 550 Physics of Semiconductor Devices

PHYS 551 Analytical Mechanics

PHYS 552 Statistical Physics
Laws of thermodynamics, microcanonical ensemble, Liouville formalism, ergodicity, ensemble theory, phase transitions, critical phenomena, mean-field theory, scaling and renormalization, quantum statistical mechanics, Bose-Einstein condensation, superfluidity.

PHYS 553 Methods of Mathematical Physics
Sturm-Liouville theory. Special functions: Gamma functions, Bessel functions, Legendre polynomials, integral transforms, integral equations, calculus of variations.

PHYS 559 Group Theory
Abstract group theory; theory of group representations; physical applications of group theory, full rotation groups and angular momentum; applications in molecular and solid state physics; permutation symmetry applications to many particle systems.

PHYS 561 Special Topics in Condensed Matter Physics I
PHYS 562 Special Topics in Condensed Matter Physics II
PHYS 565 Special Topics in Condensed Matter Physics III
PHYS 566 Special Topics in Condensed Matter Physics IV
Exactly solved models in quantum and classical physics. Two-dimensional (sing model; dual lattices, transfer matrix, monodromoy matrix, star-triangle relations and the Yang-
Baxter equation; Ic e theory of Laser; Cavity Quantum Electrodynamics; Review Electromagnetically-induced transparency; Quantum squeezed states; Atom-field interaction; Coherent trapping; Coherent state path integrals for Bosons and Fermions, Gell-Mann Low equation, Green's functions, diagrammatic perturbation theory, Second Quantization, Quantum Optics

PHYS 564 Optical Trapping and Optical Manipulation


PHYS 571 Special Topics in Applied Physics I

Nonlinear optics: Linear and nonlinear polarization, Maxwell's constitutive and wave equations, harmonic and anharmonic oscillator, second harmonic generation, optical parametric oscillation, spontaneous and stimulated Raman scattering, two-photon absorption, coherent anti-stokes Raman scattering, degenerate four-wave mixing, Brillouin scattering, absorption.

PHYS 572 Special Topics in Applied Physics II

Important methods for calculating electronic energy spectra and electron-electron correlations in condensed matter: density functional theory, local density approximation argumented plane wave method, linear combination of muffin-tin orbital method, the pseudopotential method, configurational interaction, electron-electron in atoms and solids.

PHYS 573 Special Topics in Applied Physics III


PHYS 577 Ultrafast and Non Linear Optics

General introduction to the field of ultrafast optics and nonlinear optics. Nonlinear and dispersive pulse propagation, optical solutions, laser dynamics, mode-locking, ultrafast lasers, commonly used nonlinear optical processes.

PHYS 580 Experimental Methods in Applied Physics


PHYS 591 Graduate Seminar I

PHYS 592 Graduate Seminar II

This is a graduate (MS and PhD) seminar course. The instructor and students meet once a week for presentations and discussions. Topics of presentations are chosen by the mutual consent of the instructor and the students.

PHYS 599 Master's Thesis

PHYS 612 Quantum Optics

Quantization of the electromagnetic field; coherent and squeezed states; atom-field interaction; coherent trapping; electromagnetically-induced transparency; quantum theory of laser; cavity quantum electrodynamics; review of nonlinear optical effects; quantum theory of nonlinear optical susceptibility; low-light-level nonlinear optics.

PHYS 651 Many Body Theory

Exchange Symmetry, Fermions and Bosons, Second Quantization Formalism, Free Bosons, Bose-Einstein Condensation, Free Fermions, Temperature Dependence, Interactions, Hartree-Fock and Random Phase approximation, BCS theory, Gross-Pitaevskii equation, Bogoliubov de Gennes equation. Green's functions, diagrammatic perturbation theory, Second Quantization, Quantum Optics

PHYS 652 Advanced Statistical Mechanics

Random variables and their transformations, the langevin and fokker-planck equations, boltzmann transport equation, the h-function, and its solutions the wigner function the master equation, detailed balance. The ising model, solution to the 1-D model. The 2-D ising model-high and low temperature series, mean field theory. Introduction to phase transitions and critical phenomena-the critical exponents. The monte-carlo method, simulated annealing and molecular dynamics. The renormalization group theory and its application to the ising model. Other model systems with more complicated phase diagrams-multicriticality. Dynamic criticality-self ordered criticality.

PHYS 673 Nuclear and Particle Physics

Introduction to subatomic particles, nuclear models, elementary particles, symmetries, strong and weak interaction physics, and experimental techniques in nuclear and particle physics, accelerators.

PHYS 699 Ph.D. Dissertation

SAMPLE OF RECENT PUBLICATIONS

• A. Cakan, C. Sevik, C. Bulutay, “Strained band edge characteristics from hybrid density functional theory and empirical pseudopotentials: GaAs, GaSb, InAs and InSb”, J of Physics D, 49, 085104-1--9 (2016)


• S. Buyukdagli, R. Blossey, "Correlation-induced DNA adsorption on like-charge membranes", Physical Review E, 94, 042502-1--17 (2016)


DNA molecules”, J of Chemical Physics, 144, 084902-1--12 (2016)


• O. Uzengi Akturk, E. Akturk, S. Ciraci, “Effects of adatoms and physisorbed molecules on the physical properties of antimonene”, Physical Review B, 93, 035450-1--8 (2016)


• A. Yeltik, S. Delikanli, M. Olutas, Y. Kelestemur, B. Guzel, H.V. Demir, “Experimental Determination of the Absorption Cross-Section and Molar Extinction Coefficient of Colloidal CdSe Nanoplatelets”, J of Physical Chemistry C (Forthcoming)

• B. Guzel, H.V. Demir, “Near-Field Energy Transfer Using Nanoemitters For Optoelectronics”, Advanced Functional Materials (Forthcoming)


• S. Yang, V. D. Ta, Y. Wang, R. Chen, T. He, H. V. Demir, H. Sun, “Reconfigurable Liquid Whisping Gallery Mode Microlasers”, Scientific Reports, 6, 27200-1-9 (2016)

• T. Erdem, H.V. Demir, “Colloidal nanocrystals for quality lighting and displays: milestones and recent developments”, Nanophotonics, 5, 74-95 (2016)

• T. Erdem, Z. Soran-Erdem, Y. Kelestemur, N. Gaponik, H.V. Demir, “Excitonic improvement of colloidal nanocrystals in salt powder matrix for quality lighting and color enrichment”, Optics Express, 24, 74-84 (2016)


• X. Zhao, Y. Gao, B. Zhu, H.V. Demir, S. J. Wang, H. Sun, “Exciton energy recycling from ZnO defect levels: towards electrically driven hybrid quantum-dot white light-emitting diodes”, Nanoscale, 8, 5835-5841 (2016)


• O. Akin, H.V. Demir, “Mid-wave infrared metasurface microlensed focal plane array for optical crosstalk suppression”, Optics Express, 23, 27020-27027 (2015)


• M. Mirzaei, O. Gulseren, N. Hadipour, “DFT explorations of quadrupole coupling constants for planar 5-fluorouracil pairs”, Computational and Theoretical Chemistry, 1090, 67-73 (2016)


• M. Mirzaei, O. Gulseren, “DFT studies of CNT-functionalized uracil-acetate hybrids”, Physica E, 73, 105-109 (2015)


• I. Baylam, O. Balci, N. Kakenov, C. Kocabas, A. Sennaroglu, “Graphene-gold supercapacitor as a voltage controlled saturable absorber for femtosecond pulse generation”, Optics Letters, 41, 910-913 (2016)


• O. Salihoglu, N. Kakenov, O. Balci, S. Balci, C. Kocabas, “Graphene as a Reversible and Spectrally Selective Fluorescence Quencher”, Scientific Reports, 6, 39911-1-7 (2016)


• P. Aydogan, O. Balci, C. Kocabas, S. Suzer, “Monitoring the operation of a graphene transistor in an integrated circuit by XPS”, Organic Electronics, 37, 178-182 (2016)


• S. Cakmakyan, L. Sahin, F. Pierini, E. Ozbay, “Resonance tuning and broadening of bowtie nanoantennas on graphene”, Photonics and Nanostructures, 12, 199-204 (2014)


Faculty Profile:
Dr. F. Ömer İlday,
Associate Professor,
Department of Physics

F. Ömer İlday received a B.S. degree in theoretical physics from Boğaziçi University in 1998, and a Ph.D. from Cornell University. Following this, he did postdoctoral work in the Department of Electrical Engineering at the Massachusetts Institute of Technology (MIT) on a Research Laboratory of Electronics Fellowship. In 2005, he was named a research scientist at MIT; he joined the faculty of Bilkent University in 2006.

Dr. İlday was the first to propose the explicit management of the nonlinear dynamics of mode-locked lasers in order to improve their performance. (J. Opt. Soc. Am. B, 2002). This led to his invention of the similariton laser (Phys. Rev. Lett., 2004); in 2010, he invented the soliton-similariton laser (Nature Photon., 2010). He was also the first to propose the deliberate introduction of nonlinear feedback mechanisms into laser–material interactions. This approach has led to the invention of nonlinear laser lithography (Nature Photon., 2013) and ablation-cooled laser material removal (Nature, 2016) as well as an ERC Consolidator Grant.

In addition to his academic activities, Dr. İlday is a cofounder of FiberLAST, Inc., which has received numerous technology awards and is the first and only company to design and manufacture industrial fiber lasers in Turkey. Dr. İlday’s contributions to the optics community include serving as a topical editor for Optics Letters, as well as doing stints as a guest editor for various publications including Optics Express. He regularly serves as a referee for a number of scientific journals and has been a technical committee member for numerous international conferences. Dr. İlday has coauthored more than 65 journal articles and given more than 150 invited talks, which have received close to 3,000 citations. He has received awards and honors that include the Findlay Award from Cornell University (2004), the TUBA Outstanding Young Scientist Award (2006), the TUBITAK Incentive Award (2011), the Turkish Physical Society’s Engin Arık Science Award (2012), and membership in the Science Academy (2016).

Faculty Profile:
Dr. Oğuz Gülseren,
Professor,
Department of Physics

Oğuz Gülseren, chair of the Department of Physics, received a B.Sc. from the Electronics and Electrical Engineering Department of Middle East Technical University, Ankara, Turkey (1986), and an M.Sc. (1988) and a Ph.D. (1992) in physics from Bilkent University. He went on to work at SISSA (1992 to 1995) and ICTP (1994 to 1995) in Italy, Bath University in the UK (1995 to 1998), and, in the USA, the Carnegie Institution of Washington (1998 to 1999), and the University of Pennsylvania and NIST (1999 to 2002). He joined the Bilkent University Department of Physics in 2002.

Prof. Gülseren’s current research interests include properties of nanostructures such as graphene, nanotubes, and nanowires, novel 2D materials, theory of self-assembly and self-organization, dyesensitized and perovskite solar cells, atomic-scale friction, and biomimetic adhesion from first principles calculations. He has coauthored around 85 refereed papers, and received the Istanbul University Science Award (2002), the TUBITAK-TWAS (Third World Academy of Science) Young Scientist Award (2003), and the TUBITAK Science Award (2016). He was an associate member of the Abdus Salam International Center for Theoretical Physics (ICTP) in Trieste (Italy) from 2005 to 2010, an associate member of the Turkish Academy of Sciences (TUBA) from 2006 to 2012, and has been a full member of the Science Academy (Istanbul) since 2012.

Contact:
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(Department Chair)
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phys.bilkent.edu.tr
The Department of Computer Engineering offers M.S. and Ph.D. degree programs with the possibility of specialization in various areas of research in the field. Current research areas are artificial intelligence, logic, computer vision, data mining, machine learning, pattern recognition, big data, data stream processing systems, data-intensive distributed systems, privacy enhancing technologies, applied cryptography, network and data security, recommender systems, bioinformatics, computational biology, genomics, biological networks, database systems, distributed database systems, object-oriented systems, information storage and retrieval, computer graphics, physically based animation, ray tracing, radiosity, user interfaces, image analysis, parallel processing, parallel algorithm design, task assignment, simulation of various applications on multicore architectures, multicores and manycores, cloud computing, high-performance computing, parallel methods for scientific computing, computer networks, mobile and wireless networking, combinatorial algorithms, graph theory, graph drawing, graph coloring, computational geometry, graph visualization, capacity planning for web services, and performance modeling.

**FACULTY**

**VAROL AKMAN,** Professor. Ph.D., Electrical, Computer, and Systems Engineering, Rensselaer Polytechnic Institute, 1985. Artificial intelligence, logic, philosophy of language, pragmatics, the Internet and society.


**CAN ALKAN,** Assistant Professor. Ph.D., Computer Science, Case Western Reserve University, 2005. Bioinformatics, genomics, computational biology.


**FAZLI CAN,** Visiting Professor. Ph.D., Computer Engineering, Middle East Technical University, 1985. Information retrieval, data mining.


**A. ERCÜMENT ÇİÇEK,** Assistant Professor. Ph.D., Computer Science, Case Western Reserve University, 2013. Bioinformatics, Computational Biology, Biological Network Analyses, Machine Learning.

**LORI RUSSELL DAĞ,** Instructor. M.S., Computer Engineering, Atılım University, 2006. Object oriented programming, computer applications, computer science education.

**DAVID DAVENPORT,** Lecturer. Ph.D., Electronic and Electrical Engineering, University of Birmingham, 1980. Artificial intelligence, philosophy of information and mind, computers in education and learning, the Internet and society, information retrieval.


**ÇİĞDEM GÜNDÜZ DEMIR,** Associate Professor. Ph.D., Computer Science, Rensselaer Polytechnic Institute, 2005. Computational biology, machine learning, pattern recognition, medical image analysis, computer vision and information retrieval.


**HAKAN FERHATOSMANOĞLU,** Professor. Ph.D., Computer Science, University of California, Santa Barbara, 2001. Database systems, data mining, bioinformatics.

**BÜĞRA GEDİK,** Associate Professor. Ph.D., Computer Science, Georgia Institute of Technology, College of Computing, 2006. Data intensive distributed systems, distributed systems, data bases, and cloud computing.

**UĞUR GÜDÜKBAY,** Professor. Ph.D., Computer Engineering and Information Science, Bilkent University, 1994. Computer graphics (physically-based modeling crowd simulation, virtual and augmented reality), multimedia databases, and computational geometry.
H. ALTAY GÜVENİR, Professor and Department Chair. Ph.D., Computer Engineering and Science, Case Western Reserve University, 1987. Artificial intelligence, machine learning, data mining, big data.


AYŞE SEMRA MUMCU, Instructor. M.S., Electrical and Electronics Engineering, Middle East Technical University, 1990. Computer architecture, technical computing.


MUSTAFA ÖZDAL, Assistant Professor. Ph.D., Computer Science, University of Illinois at Urbana-Champaign, 2005. High performance computing, parallel and heterogeneous computing, hardware/FPGA accelerators for big data applications.


ÖZCAN ÖZTÜRK, Associate Professor. Ph.D., Computer Science and Engineering, Pennsylvania State University, 2007. On-chip multiprocessors, compiler optimizations, computer architecture, memory optimization, low-power system design, reliability.

İPEK SÖZEN, Instructor. M.S., Computer Engineering, Middle East Technical University, 1989. Programming languages, data structures.


ÖZGÜR ULUSOY, Professor and Associate Provost. Ph.D., Computer Science, University of Illinois at Urbana-Champaign, 1992. Database systems, web information retrieval.


DOCTOR OF PHILOSOPHY IN COMPUTER ENGINEERING

Admission: All applicants are required to have a B.S. degree in computer engineering or a related field of science or engineering. Evaluation of applicants is based on their ALES (Akademik Personel ve Lisansüstü Eğitim Gişis Sinavi/Academic Personnel and Postgraduate Education Entrance Examination) scores, past academic records, reference letters, and an interview. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of another country may take the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of satisfactory knowledge of English.

Degree Requirements: The completion of 21 credit units of course work beyond the M.S. level is required. Ph.D. candidates must pass a qualifying exam, typically in their fourth semester, and then must prepare a dissertation proposal. Preparation and defense of a dissertation based on original research is the centerpiece of the program. The standard duration of study for the Ph.D. degree is 8 semesters for students who enter the program with an M.S. degree; the maximum duration is 12 semesters.

COURSE DESCRIPTIONS

CS 502 Algorithms II

CS 510 Networked Entertainment
Introduction to the key concepts involved with networked entertainment; concepts in generating, delivering and consuming multimedia content. Theory and principles in coding, packaging and securing multimedia data, with a focus on the methods for reliable and scalable transport over IP networks in the context of IPTV, video-on-demand and streaming applications. The best practices in network and operating system support for media transport, and the state-of-the-art in current deployments.

CS 513 Implications of the Internet

CS 515 Mobile and Wireless Networking

CS 527 Advances in Switching Networks

CS 528 Advances in Switching Networks II

CS 531 Advances in Data Management Research
High dimensional data management (indexing, similarity search, data analytics); bitmap indexing (compression, query processing), data streams, mining multimedia, time-series, and biological data.

CS 533 Information Retrieval Systems
Introduction to information storage and retrieval (IR), IR vs. DBMS. User perspective, search models, evaluation of IR systems. Formal IR models. Data structures and techniques including, inverted files, signature files, information filtering, clustering and cluster-based retrieval, hypertext and multimedia systems. IR and the Internet, browsing strategies, search engines, web robots and intelligent agents.

CS 541 Chip Multiprocessors

CS 545 Fundamentals of Stream Processing
Fundamental concepts of stream processing, data flow programming (static, dynamic, and nested composition), large-scale streaming application development (modularity, extensibility, distribution, debugging, and visualization), software architecture for streaming middleware, design principles and patterns for streaming applications (including non-functional topics such as parallelization, load balancing, load shedding, and fault tolerance), and basic stream processing and mining algorithms.

CS 550 Machine Learning

CS 551 Pattern Recognition

CS 553 Intelligent Data Analysis
Differences between data and knowledge, assessing knowledge; Data analysis, process, methods, tasks and tools; Practical data analysis; Data understanding, attribute understanding, data quality, data visualization, correlation analysis, outlier detection, missing values; Principles of modeling, model classes, fitting criteria and score functions, model fitting, types of errors; Data preparation, feature selection, dimensionality reduction, record selection, improving data quality; Use of machine learning and data mining techniques in intelligent data analysis.

CS 557 Computational Systems Biology
Short introduction to molecular biology and systems biology, gene, protein, function, biological data types; machine learning overview; analyzing and reconstructing biological networks, inferring protein signaling networks, inferring transcriptional regulatory networks, predicting host-pathogen networks; metabolic networks; regulatory motif finding; comparing and searching interaction networks, dynamical networks; annotating and predicting gene function.

CS 559 Deep Learning

CS 564 Computational Geometry
Algorithmic background, data structures, geometric preliminaries, models of computation. Geometric searching, point-location, problems, range-searching problems. Convex hulls, problem statement and lower bounds, convex hull algorithms in the plane, Graham's scan, Jarvis's march, QUICKHULL techniques, dynamic convex hull, convex hull in 3D. Proximity problem, a collection of problems, a computational prototype: element uniqueness, lower bounds, the closest-pair problem: a divide-and-conquer approach, the Voronoi diagram, proximity problems solved by the Voronoi diagram triangulation, planar triangulations, delaunay triangulation, intersections, application areas, planar applications; intersection of convex polygons, star-shaped polygons; intersection of line segments. 3D applications: intersection of 3D convex polyhedra; intersection of half-spaces.

CS 565 Application of Computer Graphics

CS 568 Advanced Topics in Computer Graphics

CS 573 Algorithms I

CS 577 Data Privacy
Introduction to privacy, economics and incentives, crypto-based solution for privacy, hiding data from the database
SAMPLE OF RECENT PUBLICATIONS

- V. Akman, M.B. Senol, “The Truth about “It is True that...”, Pragmatics and Cognition (Forthcoming)
- The Computational Pan - Genomics Consortium, ..., C. Alkan, “Computational pan-genomics: status, promises and challenges”, Briefings in Bioinformatics (Forthcoming)
and surface rendering techniques”, *J of Molecular Graphics and Modelling, 50, 50-60* (2014)


• H. Aksu, I. Korpeoglu, O. Ulusoy, “An Analysis of Social Networks based on Tera-scale Telecommunication Datasets”, *IEEE Trans on Emerging Topics in Computing (Forthcoming)*


• O. Sanli, I. Korpeoglu, A. Yazici, “Rule-Based Inference and Decomposition for Distributed In-Network Processing in Wireless Sensor Networks”, *Knowledge and Information Systems (Forthcoming)*


• H. Aksu, M. Canim, Y.C. Chang, I. Korpeoglu, O. Ulusoy, “Distributed k-Core View Materialization and Maintenance for Large Dynamic Graphs”, *IEEE Trans on Knowledge and Data Engineering, 26, 439-452* (2014)


• M.M. Ozdal, S. Yesil, T. Kim, A. Ayupov, J. Greth, S. Burns, O. Ozturk, “Graph Analytics Accelerators for Cognitive Systems”, *IEEE Micro (Forthcoming)*


• F. Calisir, M. Bastan, O. Ulusoy, U. Gudukbay, “Mobile multi-view object image search”, Multimedia Tools and Applications (Forthcoming)


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Faculty Profile: Dr. Buğra Gedik, Associate Professor, Department of Computer Engineering

Buğra Gedik received a Ph.D. in computer science from the Georgia Institute of Technology in 2006. His research interests are in the area of large-scale data-intensive distributed systems. His recent focus has been on scalability, load balancing, parallel processing, fault tolerance, and performance profiling in the context of distributed data stream processing systems. Until 2012, he was a research staff member at the IBM T. J. Watson Research Center, working on the System S data stream processing project, supported by the U.S. Department of Defense. He is the co-inventor of the SPADE and SPL programming languages and for a time served as the chief architect of the InfoSphere Streams product. After joining Bilkent University, Dr. Gedik received a BAGEP Young Scientist Award and an IBM Faculty award in 2013, and a Heroes of Science Association Young Scientist Award in 2015. He is co-author of the book Fundamentals of Stream Processing: Application Design, Systems, and Analytics (Cambridge Press). Dr. Gedik has published over 90 peer-reviewed articles in the areas of distributed computing and data management. He is a co-recipient of the IEEE ICDCS (2003), IEEE DSN (2011), ACM DEBS (2011 and 2012), and IEEE ICWS (2013) best paper awards. His articles have appeared in journals such as IEEE Transactions on Parallel and Distributed Systems, IEEE Transactions on Knowledge and Data Engineering, IEEE Transactions on Computers, IEEE Transactions on Mobile Computing, and the VLDB Journal. He served as the planning committee co-chair for the 2007 IEEE CollaborateCom and 2009 ACM DEBS international conferences. He is an editor for the journals IEEE Transactions on Services Computing.

He is a former IBM Master Inventor and has applied for over 30 patents, most of them related to his work on streaming technologies.

Faculty Profile: Dr. Selim Aksoy, Associate Professor, Department of Computer Engineering

Selim Aksoy received a Ph.D. degree from the University of Washington, Seattle (USA), in 2001. Before joining Bilkent University, he was a research scientist at Insightful Corporation in Seattle, where he was involved in image understanding and data mining research sponsored by the National Aeronautics and Space Administration, the U.S. Army, and the National Institutes of Health. His research interests include computer vision, statistical and structural pattern recognition, machine learning and data mining with applications to remote sensing, medical imaging, and multimedia data analysis. His focus is on the development of new computer vision and machine learning algorithms for segmentation, object recognition, contextual classification, and content-based retrieval in very high-resolution satellite images, and localization and classification of cancerous structures in whole-slide breast histopathology images.

Dr. Aksoy has authored over 90 publications and has received more than 700 citations in ISI indices and 2,000 citations according to Google Scholar. He has been the principal investigator in research projects sponsored by TÜBİTAK and the European Commission. He has received a NATO Science Fellowship (1996), the TÜBİTAK Career Award (2004), a Marie Curie Fellowship from the European Commission (2005), a Fulbright Scholarship (2013), the Bilkent University Distinguished Teaching Award (2014), the Outstanding Young Scientist Award (GEBIP) from the Turkish Academy of Sciences (2015), the Distinguished Young Scientist Award (BAGEP) from the Science Academy Association (2016), and the Parlar Foundation’s Research Incentive Award (2016).

He has served as an organizer or program committee member for more than 80 conferences, and as a guest editor for special issues on “Pattern Recognition in Remote Sensing” in IEEE Transactions on Geoscience and Remote Sensing (2007), Pattern Recognition Letters (2009), and the IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing (2012). He was chair of International Association for Pattern Recognition’s Technical Committee on Remote Sensing from 2006 to 2010, and an associate editor of Pattern Recognition Letters from 2009 to 2013.
Graduate programs in the Department of Electrical and Electronics Engineering focus on those fields which are heavily in demand worldwide. Current research areas are signal and image processing, electronics, optics, acoustics, electromagnetics, nanotechnology, robotics, telecommunications and networks, biomedical engineering, and system and control theory. The department emphasizes research, which is supported by excellent laboratories, computing facilities, and libraries. These facilities are continuously upgraded through various grants from national and international sources. At present, there are image processing, signal processing, optics, electronics, telecommunications, robotics and control, microwave and antenna, nanophotonics, and biomedical laboratories.

FACULTY


AYHAN ALTINTAŞ, Professor. Ph.D., Electrical Engineering, Ohio State University, 1986. Electromagnetic scattering, propagation, and radiation, antennas, fiber optics.


ORHAN ARIKAN, Professor and Department Chair. Ph.D., Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, 1990. Signal processing, remote sensing, communications.


ERGİN ATALAR, Professor. Ph.D., Electrical and Electronics Engineering, Bilkent University, 1991. Image guided medical interventions, magnetic resonance imaging, antenna design for MRI.


TOLGA ÇUKUR, Assistant Professor. Ph.D., Electrical Engineering, Stanford University, 2009. Areas of Expertise: Biomedical imaging, magnetic resonance imaging (MRI), signal processing, computational neuroscience.


SİNAN GEZİCİ, Associate Professor. Ph.D., Electrical Engineering, Princeton University, 2006. Statistical signal processing, wireless communications, ultra-wideband (UWB) systems, wireless geolocation.

YUSUF ZİYA İDER, Professor. Ph.D., Biomedical Engineering, Northwestern University, 1979. Electrical impedance tomography, magnetic resonance imaging, acquisition and processing of physiological signals, PC based instrumentation.


EZHAN KARAŞAN, Professor. Dean and Director of the Graduate School of Engineering and Science. Ph.D., Rutgers University, 1995. Performance analysis and design of communication networks, optical networks, wireless networks.

S. SERDAR KOZAT, Associate Professor. Ph.D., Electrical and Computer Engineering, University of Illinois at Urbana Champaign, 2004. Digital signal processing, adaptive filtering, online learning and machine learning algorithms for signal processing.
DOCTOR OF PHILOSOPHY IN ELECTRICAL AND ELECTRONICS ENGINEERING

Admission: All applicants are required to have a B.S. degree in electrical and electronics engineering or a related field of science or engineering. Evaluation of applicants is based on their ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı/Academic Personnel and Postgraduate Education Entrance Examination) scores, past academic records, reference letters, and an interview. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of another country may take the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of satisfactory knowledge of English.

Degree Requirements: The completion of 21 credit units of course work beyond the M.S. level is required. Ph.D. candidates must pass a qualifying exam, typically in their fourth semester, and then must prepare a dissertation proposal. Preparation and defense of a dissertation based on original research is the centerpiece of the program. The standard duration of study for the Ph.D. degree is 8 semesters for students who enter the program with an M.S. degree; the maximum duration is 12 semesters.

MASTER OF SCIENCE IN ELECTRICAL AND ELECTRONICS ENGINEERING - TELECOMMUNICATIONS AND NETWORKING (Non-thesis)

The non-thesis M.S. program in Telecommunications and Networking (M.S.T.N.) is an interdisciplinary program specifically focused on the constantly evolving field of information technologies. Graduates of this program may expect to find employment in a broad range of businesses and organizations, including telecommunications equipment/software manufacturers, internet service providers, wireless network operators, mobile application development businesses, telecommunication chip manufacturers, telecommunications regulatory agencies, and military telecommunication systems development companies. The program is intended for recent graduates as well as engineers who are currently employed by such businesses/organizations and wish to obtain a specialized advanced degree in telecommunications and networking. Students in this program will learn what they need to become leaders in the ever-changing world of global information networks and wireless/optical telecommunication systems and technologies. In order to obtain the M.S.T.N. degree, students are required to successfully complete courses in telecommunications and networking as well as a wide range of subjects including computer science, operations research, and information technology-related management and law.

Admission: Applicants are required to have a B.S. degree in electrical and electronics engineering or a related field of science or engineering. Evaluation of applicants is based on their ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı/Academic Personnel and Postgraduate Education Entrance Examination) scores, past academic records, reference letters, and an interview. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of another country may take the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of satisfactory knowledge of English.

Degree Requirements: Students are expected to complete at least 10 courses equivalent to at least 30 credit units of course work. Up to 3 of these courses can be selected from among undergraduate courses offered in related fields.

In addition to these courses, students must also complete a one-semester project under the supervision of a faculty member in the Department of Electrical and Electronics Engineering.


MEHMET ALPER KUTAY, Senior Lecturer. Ph.D., Electrical and Electronics Engineering, Bilkent University, 1999. Signal detection, parameter estimation, active and passive target detection and tracking, radar signal processing, and time-frequency analysis.


LEVENT ONURAL, Professor. Ph.D., Electrical and Computer Engineering, State University of New York at Buffalo, 1985. Signal processing, image and video processing, holography, signal processing for diffraction and holography, 3DTV.

HALDUN ÖZAKTAŞ, Professor. Ph.D., Electrical Engineering, Stanford University, 1991. Optical information processing, signal and image processing, optoelectronic and optically interconnected computing systems.


HITAY ÖZBAY, Professor and Associate Provost. Ph.D., Control Sciences and Dynamical Systems, University of Minnesota, 1989. Robust control, distributed parameter systems, applications of control theory in wide areas engineering and sciences.


EMİNE ÜLKÜ SARITAŞ, Assistant Professor. Ph.D., Electrical Engineering, Stanford University, 2009. Biomedical imaging, magnetic resonance imaging (MRI), magnetic particle imaging (MPI), signal and image processing, safety limits of magnetic fields in medical imaging systems.

CEM TEKİN, Assistant Professor. Ph.D, Electrical Engineering and Computer Science, University of Michigan, 2013. Online learning, data mining, multi-armed bandits, multi-agent systems, healthcare informatics, recommender systems, dynamic spectrum access.

MASTER OF SCIENCE IN ELECTRICAL AND ELECTRONICS ENGINEERING

Admission: All applicants are required to have a B.S. degree in electrical and electronics engineering or a related field of science or engineering. Students with a B.S. degree in an area other than electrical and electronics engineering may be required to take certain undergraduate courses in order to acquire the necessary background in the field. Evaluation of applicants is based on their ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı/Academic Personnel and Postgraduate Education Entrance Examination) scores, past academic records, reference letters, and an interview. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of another country may take the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of satisfactory knowledge of English.

Degree Requirements: In addition to completing at least 21 credit units of course work, the M.S. degree candidate must prepare and successfully defend a thesis. The expected duration of study for the M.S. degree is 4 semesters; the maximum duration is 6 semesters.
Engineering. The expected duration of study for the M.S.T.N. degree is 2 semesters, and the maximum duration is 3 semesters.

COURSE DESCRIPTIONS

EEE 501 Linear System Theory

EEE 511 Telecommunication Electronics

EEE 512 Microwave Electronics

EEE 514 Introduction to CMOS VLSI Design
Introduction to CMOS circuits, MOS transistor theory, CMOS processing technology, CMOS circuit characterization. CMOS VLSI circuit design, clocking strategies, case studies. Recent topics and developments in Introduction to CMOS VLSI Design.

EEE 515 Analog CMOS Integrated Circuits
Review of MOS device physics, single stage amplifiers, differential amplifiers, current mirrors, frequency response of amplifiers, Miller effect, noise in amplifiers, feedback, operational amplifiers, slew rate, power supply rejection, stability and frequency compensation, bandgap references, switched capacitor circuits, nonlinearities, linearization, offset, oscillators, phase locked loops. Recent topics in CMOS design.

EEE 518 Principles of Electronic Devices

EEE 519 Power Electronics
Analysis and design of linear regulators, inverters, DC-DC converters, different topologies of converters, efficiencies of power conversion circuits, transformers and magnetic design, power semiconductor devices, power factor and power factor correction.

EEE 520 Multirate Signal Processing and Wavelet Theory

EEE 521 Introduction to Radar Signal Processing

EEE 522 Optical Information Processing
Two-dimensional signals and systems. Space-frequency representations. Signal transformations. Linear system formulation of propagation of light through free space, lenses, and lens-like media and their analogy with electrical systems. Analog signal and image processing with optical systems, including transformations, filtering, etc. Alternative mathematical formulations of optical propagation: geometrical optics, scalar wave theory, phase-space approaches, variational and Hamiltonian formulation, operator algebras. Invariants and conservation laws.

EEE 523 Speech Processing
Modeling of speech production, short-time Fourier analysis of speech, linear predictive coding (LPC), pitch estimation, code excited linear prediction (CELP) speech synthesis, introduction to speech recognition.

EEE 525 Advanced Signal Processing

EEE 526 Digital Image Processing

EEE 527 Digital Coding of Waveforms
Sampling of band limited waveforms; characteristics of speech and image waveforms; quantization of discrete time signals. Pulse code modulation (PCM), differential PCM. Vector quantization, tree and Trellis coders. Subband coding, KL transform, DCT, DHT, OWHT, transform coding. Run-length coding of binary waveforms. Recent topics on digital coding.

EEE 528 Optics

EEE 529 Photonics

EEE 530 Digital Communications Theory
Physical layer aspects of digital communication systems. Signal representations, power spectrum. Optimum receivers for Gaussian noise channels. Linear modulations with memory: Channel coding, sequence detection. Carrier recovery and timing estimation. Communication in dispersive channels: Signal design, optimum receivers, equalization. Communication in fading channels: Channel...
models, diversity techniques, maximum ratio combining receivers.

**EEE 533 Random Processes**

**EEE 534 Wireless Communications**

**EEE 536 Internet Architecture and Protocols**

**EEE 538 Communication Network Analysis**

**EEE 539 Detection and Estimation Theory**

**EEE 542 Nonlinear Systems**

**EEE 543 Neural Networks**

**EEE 544 Robust Feedback Theory**

**EEE 546 Control and Optimization of Stochastic Systems**

**EEE 547 Introduction to Robotics**
Robot arm kinematics (forward and inverse kinematics); robot arm dynamics (equations of motion, equivalent formulations); planning of manipulator trajectories; range sensing (time-of-flight and triangulation systems, nonaim target size, optical flow), proximity sensing (optical, magnetic, capacitive, inductive, ultrasonic), tactile (touch) sensing, force and torque sensing, dead reckoning (odometry and inertial sensing); mobile robots (localization, mapping, path planning, navigation, obstacle avoidance, object classification); multi-sensor data fusion.

**EEE 549 Nanoscale Fabrication Technologies for Semiconductors**

**EEE 550 Nanoelectronic Devices: Physics and Technology**
Semiconductor electronics technology, overview of fabrication methods, physics of semiconductors in equilibrium and non-equilibrium, movement of free carriers in semiconductors, p-n and metal-semiconductor junctions, heterojunctions and quasi-electric fields, basic quantum mechanics for nanoscale semiconductor structures and quantum-effect devices, metal-oxide-semiconductor capacitor and MOS transistors, bipolar junction transistors, field effect transistors and nanowire FETs, high electron mobility transistors, resonant tunneling in semiconductor nanostructures, transistor scaling issues, ballistic transport and ballistic transistors, graphene transistors.

**EEE 551 Microwave Engineering**

**EEE 552 Antenna Engineering**

**EEE 554 High Frequency Techniques in Electromagnetics**
High frequency solutions to Maxwell’s equations. Geometrical optics (GO), the geometrical theory of diffraction (GTD), the uniform geometrical theory of diffraction (UTD), equivalent current methods (ECM) and their application. Aperture integration, physical theory of diffraction (PTD) Curved surface diffraction.

**EEE 555 Computational Methods in Electromagnetics**
Classification of electromagnetics problems, finite difference schemes, finite difference time domain method, finite element method, method of moments.

**EEE 557 Acoustic Waves and Devices**
Plane waves in fluids, acoustic wave equation; transient and steady-state reflection and transmission; lumped elements; refraction; strings, membranes, and cavities; ray acoustics; absorption and dispersion; source theory; vibrating piston, transducers; diffraction.
EEE 558 Electroacoustic Transduction

EEE 560 Nanoengineering and Nanodevices
Fundamentals of nanophotonics and nanoelectronics, with emphasis on applications in modern semiconductor devices based on quantum properties of light and matter. Topics include: Schrödinger's equation, elements of quantum mechanics (including quantum confined structures, simple periodic structures), tunneling, semiconductor fundamentals, review of Maxwell's equations, light propagation, and reflection from dielectrics, plasmonics, photonic crystals, advanced electronic devices.

EEE 573 Medical Imaging
Fundamentals and applications of four medical imaging techniques; magnetic resonance imaging, ultrasound, nuclear medicine X-ray computed tomography.

EEE 574 Foundations of Magnetic Resonance Imaging
Basic principles of magnetic resonance imaging (MRI), instrumentation, and various methods used in MRI. Various research areas in this highly active field are discussed.

EEE 580 Advanced Optoelectronics: Innovative Design

EEE 581 Biomedical Signals and Instrumentation
Biophysics of cell membranes, models of neuron membrane potential, Hodgkin-Huxley equations for the action potential, propagation of the action potential, neurocommunication, simple neural networks which explain behavior; volume conductor fields, theory of Electrocardiography (ECC), ECG amplifiers and instrumentation, ECG signal processing, EEG, EMG, and other bioelectric signals, model of the cardiovascular system, model of the respiratory system, model of the neurocardiac control system, transducers for bioelectric, cardiovascular and respiratory measurements, preconditioning circuits and instrumentation techniques. Recent topics and developments in biomedical signals and instrumentation.

EEE 582 Computational Neuroscience

EEE-585 Statistical Learning and Data Analytics

EEE 591 Graduate Seminar I
EEE 592 Graduate Seminar II
Seminars on recent topics in electrical and electronics engineering.

EEE 596 Graduate Research Project in Telecommunications and Networking
A technical project emphasizing engineering design principles on telecommunications and/or networks to be carried out by the graduate student under the supervision of a faculty member. Open to graduate students in the M.S. in Telecommunications and Networking program only.

EEE 599 Master’s Thesis

EEE 603 Advanced Electromagnetic Theory I

EEE 604 Advanced Electromagnetic Theory II

EEE 633 Coding Theory
Error correction techniques used to protect digital information against noise. (i) Algebraic coding techniques, including BCH and RS codes and the Berlekamp-Massey decoding algorithm. (ii) Convolutional codes and the Viterbi decoding algorithm. (iii) Turbo and LDPC codes and the message passing decoding algorithm.

EEE 634 Information Theory

EEE-644 Advanced Robust Control Theory

EEE 699 Ph.D. Dissertation

SAMPLE OF RECENT PUBLICATIONS

- C. Tunc, N. Akar, “Fixed-point analysis of a network of routers with persistent TCP/UDP flows and class-based weighted fair queuing”, *Telecommunication Systems* (Forthcoming)


• F. Arikan, S. Shukurov, H. Tuna, O. Arikan, T.L. Gulyaeva, “Performance of GPS slant total electron content and IRI-Plas-STECC for days with ionospheric disturbance”, Geodesy and Geodynamics, 7, 1-10 (2016)


• B. Barshan, G. Secer, “Improved deterministic measurement model for consumer-grade accelerometers”, Electronics Letters (Forthcoming)


• B. Barshan, G. Secer, “Improved deterministic measurement model for consumer-grade accelerometers”, Electronics Letters, 52, 529-531 (2016)


• C.E. Akbas, O. Gunay, K. Tasdemir, A.E. Cetin, “Energy efficient cosine similarity measures according to a convex cost function”, Signal Image and Video Processing (Forthcoming)


• X. Zhao, Y. Gao, Y. Wang, H.V. Demir, S. Wang, H. Sun, “Manipulating Optical Properties of ZnO/Ga\textsubscript{i}ZnO Core-Shell Nanorods Via Spatially Tailoring Electronic Bandgap”, Advanced Optical Materials, 3, 1066-1071 (2015)


• B. Guilhabert, C. Foucher, A.M. Haughey, E. Mutlugun, Y. Gao, J. Herrnsdorf, H.D. Sun, H.V. Demir, M.D. Dawson, N. Laurand, “Nanosecond colloidal quantum dot lasers for sensing”, Optics Express, 22, 7803-7319 (2014)

• H. Zhang, H.V. Demir, A.O. Govorov, “Plasmonic metamaterials and nanocomposites with the narrow transparency window effect in broad extinction spectra”, ACS Photonics, 1, 822-832 (2014)


• A. Nirmal, A.K.K. Kyaw, X.W. Sun, H.V. Demir, “Microstructured porous ZnO thin film for increased light scattering and improved efficiency in inverted organic photovoltaics”, Optics Express, 22, 1412-1421 (2014)


• M.E. Tutay, S. Gezici, H. Soganci, O. Arikans, "Optimal channel switching over Gaussian channels under average power and cost constraints", *IEEE Trans on Communications*, 63, 1907-1922 (2015)


• G. Ozcan, M.C. Gursoy, S. Gezici, "Error rate analysis of cognitive radio transmissions with imperfect channel sensing", *IEEE Trans on Wireless Communications* (Forthcoming)


• O.F. Oran, Y.Z. Ider, “Feasibility of Conductivity Imaging Using Subject Eddy Currents Induced by Switching of MRI Gradients”, Magnetic Resonance in Medicine (Forthcoming)

• N. Gurler, Y.Z. Ider, “Gradient Based Electrical Conductivity Imaging using MRI Phase”, Magnetic Resonance in Medicine (Forthcoming)


• I. Pavlov, E. Dulgergil, E. Ilbay, F.O. Ilday, “Diffraction-limited, 10-W, 5-n, 100-kHz, all fiber laser at 1.55 um”, Optics Letters, 39, 2695-2698 (2014)


• N. D. Vunli, M. O. Sayin, I. Delibalta, S.S. Kozat, “Sequential Nonlinear Learning for Distributed Multi-Agent Systems via Feedforward Networks”, IEEE Trans on Neural Networks (Forthcoming)

• M. M. Niyashebouri, O. Demir, I. Delibalta, S.S. Kozat, “Highly Efficient Nonlinear Regression for Big Data with Lexicographical Splitting”, Signal Image and Video Processing (Forthcoming)


• F. O. Kilic, M. O. Sayin, I. Delibalta, S.S. Kozat, “Computationally Highly Efficient Mixture of Adaptive Filters”, Signal Image and Video Processing (Forthcoming)


• H. Koymen, A. Atalar, A. S. Tasdelen, “Bilateral CMUT Cells and Arrays: Equivalent Circuits, Diffraction Constants and Substrate Impedance”, IEEE Trans on Ultrasonics, Ferroelectrics and Frequency Cont (Forthcoming)


• S. Palaz, O. Oltulu, A. M. Mamedov, E. Ozbay, “A5B6C7 Ferroelectrics as Novel Materials for Phononic Crystals”, Ferroelectrics (Forthcoming)

• H. Koc, S. Palaz, A. M. Mamedov, E. Ozbay, “Optical, Electronic and Elastic Properties of Some A5B6C7 Ferroelectrics (A=Sb, Bi; B=S, Se; C=I, Br, Cl): first principle calculation”, Optical Properties of Ferroelectrics (Forthcoming)

• S. Simsek, S. Palaz, C. Akhundov, A.M. Mamedov, E. Ozbay, “AIBIIIICVI2 (A=Cu, Ag; B=Ga, In; C=S, Se, Te) Based Photonic Crystal Superlattices: Optical Properties”, Physica Status Solidi C (Forthcoming)


• P. Liu, P. Yan, Z. Zhang, H. Ozbay, “Robust Anti-windup Compensation for High Precision Tracking of a Piezoelectric Nano-stage”, IEEE Trans on Industrial Electronics, 63, 6460-6470 (2016)


- Z. Li, M. Mutlu, E. Ozbay, “Highly asymmetric transmission of linearly polarized waves realized with a multilayered structure including chiral metamaterials”, J of Physics D, 47, 075107-1-6 (2014)


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Faculty Profile:
Dr. Tolga Mete Duman,
Professor,
Department of Electrical and Electronics Engineering

Tolga Mete Duman received a B.S. degree from Bilkent University in 1993, and M.S. and Ph.D. degrees from Northeastern University, Boston (USA), in 1995 and 1998, all in electrical engineering. Prior to joining Bilkent University in September 2012, he was with the School of Electrical, Computer and Energy Engineering at Arizona State University (ASU), Tempe (USA), as an assistant professor (1998-2004), associate professor (2004-2008), and a professor (2008-2015). He is currently an adjunct member of the ASU faculty.

Dr. Duman’s current research interests are in systems, with particular focus on communication and signal processing, including wireless and mobile communications, coding/modulation, coding for wireless communications, information theory, data storage systems, and underwater acoustic communications.

He is a Fellow of IEEE (elected in 2011), and a recipient of the National Science Foundation CAREER Award and the IEEE Third Millennium medal. His publications include a book on MIMO Communications (Wiley, 2007), around 80 journal papers and over 120 conference papers. He has served as an editor for IEEE Transactions on Wireless Communications (2003-2008), IEEE Transactions on Communications (2007-2012), IEEE Communications Surveys and Tutorials (2002-2007), and Physical Communication (2010-2016). He is currently the coding and communication theory area editor for IEEE Transactions on Communications (since 2011), an editor for IEEE Transactions on Wireless Communications (since 2016), and the editor-in-chief of Physical Communication (since 2016).

Faculty Profile:
Dr. Emine Ülkü Sarıtaş,
Assistant Professor,
Department of Electrical and Electronics Engineering

Emine Ülkü Sarıtaş received a B.S. degree in electrical and electronics engineering from Bilkent University in 2002. She was awarded the Lucent Technologies Stanford Graduate Fellowship for her graduate studies in electrical engineering at Stanford University, where she received her M.S. and Ph.D. degrees in 2004 and 2009. She then worked as a postdoctoral researcher at the Department of Bioengineering at the University of California, Berkeley, from 2010 to 2013 on a Siebel Stem Cell Institute postdoctoral fellowship. Dr. Sarıtaş joined Bilkent University in 2013.

Her research focuses on developing novel biomedical imaging techniques, with an emphasis on biological and diagnostic applications. She works on novel contrast methods and high-resolution imaging techniques; specifically, she conducts research on magnetic resonance imaging and magnetic particle imaging systems. She is the recipient of the Technological and Scientific Council of Turkey’s Career Award (2014), the Turkish Academy of Sciences’ Young Scientist Outstanding Achievement Award (2015), and the Science Academy’s Young Scientist Award (2016). Dr. Sarıtaş is currently serving as an associate editor for IEEE Transactions on Medical Imaging and as an editorial board member for Nature Scientific Reports.
The overall objective of the graduate programs in the Department of Industrial Engineering is to conduct fundamental research in industrial engineering and operations research in accordance with ongoing scientific and technological developments, and to provide students with a strong analytical basis for advanced theoretical work or development of new approaches to applications. Current research areas are optimization theory/mathematical programming (linear and nonlinear optimization, combinatorial and integer optimization, graph theory and network optimization, large-scale optimization, optimization under uncertainty), stochastic systems (queuing models, maintenance, inventory control, modeling and optimization), statistics (estimation in stochastic systems, nonparametric analysis, Bayesian methods, data analysis), manufacturing systems (advanced manufacturing technologies, robotics, flexible manufacturing systems, micro/nanotechnologies, modeling and analysis of production systems), simulation, supply chain management and logistics, pricing and revenue optimization, scheduling, production planning and control systems, operations research methods in finance and energy, and sustainable operations.

**FACULTY**

**M. SELİM AKTÜRK**, Professor and Department Chair. Ph.D., Industrial Engineering, Lehigh University, 1990. Production management systems, advanced manufacturing technologies, production scheduling, airline disruption management.


**KAĞAN GÖKBAYRAK**, Assistant Professor. Ph.D., Manufacturing Engineering, Boston University, 2001. Simulation, queueing systems, perturbation analysis, optimal control, applications in manufacturing, inventory systems, telecommunications and Internet.


**AYŞE SELİN KOCAMAN**, Assistant Professor. Ph.D., Earth and Environmental Engineering, Columbia University, 2014. Sustainable energy system, power systems optimization, renewable energy sources, networking design.


**ALPER ŞEN**, Associate Professor. Ph.D., Business Administration, University of Southern California, 2000. Revenue management, inventory theory, supply chain management, machine scheduling.
DOCTOR OF PHILOSOPHY IN INDUSTRIAL ENGINEERING

Admission: All applicants are required to have a B.S. degree in industrial engineering or a related field of science or engineering. Students with a B.S. degree in an area other than industrial engineering may be required to take certain undergraduate courses in order to acquire the necessary background in the field. Evaluation of applicants is based on their ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı/Academic Personnel and Postgraduate Education Entrance Examination) scores, past academic records, reference letters, and an interview. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of another country may take the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of satisfactory knowledge of English.

Degree Requirements: The completion of 21 credit units of course work beyond the M.S. level is required. Ph.D. candidates must pass a qualifying exam, typically in their fourth semester, and then must prepare a dissertation proposal. Preparation and defense of a dissertation based on original research is the centerpiece of the program. The standard duration of study for the Ph.D. degree is 8 semesters for students who enter the program with an M.S. degree; the maximum duration is 12 semesters.

COURSE DESCRIPTIONS

IE 500 Mathematics of Operations Research
Introduction to methods of proof, sets and functions, metric spaces, functions on metric spaces, differential and integral equations, fundamentals of linear algebra.

IE 505 Mathematical Programming
Fermat rule, Lagrange multipliers, duality theory, Karush-Kuhn-Tucker conditions, convexity, conic optimization, linear optimization, networks, integer programming.

IE 507 Discrete Mathematical Models
This course is designed to illustrate both the applications of discrete mathematics to a broad range of topics in the social, biological and environmental sciences, and the influence of those applications on the development of mathematics. The use of mathematical modeling will be emphasized by encompassing tools such as graphs, weighted digraphs, Markov chains, and n-person games.

IE 510 Computational Complexity
Introduction to computability and complexity theory. Turing machine computational model. The notion of undecidability. Time and space complexity classes. Main focus on complexity classes such as P, NP, co-NP, Log Space and P-space. Fundamental results in Logic most relevant to the development of complexity theory. Approximation algorithms for some provably hard problems.

IE 512 Graph Theory

IE 513 Linear Programming

IE 514 Network Flows

IE 515 Convex Analysis
Convex sets in IR and their basic properties, separation of convex sets, properties of convex polyhedra (and polylines). Convex functions continuity and differentiability properties, sub differentiability, duality of convex sets, Fenchel dual of a convex function, bipolar theorem. Convex programming, dual convex programs, perturbation and Lagrangian approaches to duality, the connection between the two approaches, saddle point theorems. Applications of convex analysis: inequalities, interior-point methods, approximation, merit functions.

IE 518 Discrete Optimization
IE 519 Approximation Algorithms
The course covers combinatorial and mathematical programming techniques to derive approximation algorithms for np-hard optimization problems. Possible topics include greedy algorithms for vertex/cover problems; approximation schemes via dynamic programming, rounding LP relaxations of integer programs, and semi definite relaxations. The course is complemented by the implementation of selected algorithms using a high-level language such as MATLAB.

IE 521 Stochastic Processes

IE 522 Queueing Systems

IE 523 Probabilistic Analysis

IE 524 Simulation
The design and analysis of simulations. The use of simulation for estimation, comparison of policies, and optimization. Variance estimation techniques including regenerative methods, time series methods, and batch means. Variance reduction. Simulation optimization, statistical analysis of output of simulations, applications to modeling stochastic systems in computer science, engineering and operations research.

IE 525 Advanced Statistics

IE 528 Dynamic Programming

IE 530 Advanced Logistics Modeling and Optimization
Modeling advanced logistics problems. Extensions of network design, location and routing problems and formulations. Solution methodologies.

IE 534 Stochastic Models in Operations Research
Review of conditional probability; Markov chains, example models, Markov Chains with rewards; Markov decision processes, solution algorithms; an introduction to renewal theory and applications; queueing models, example applications in service systems; reliability models; other topics.

IE 535 Stochastic and Risk-Sensitive Optimization
Models, solution methods, and theory for optimization problems under uncertainty and risk. Introduction to stochastic programming, optimization problems with probabilistic constraints, two-stage and multi-stage stochastic programming problems, Markov decision processes, utility functions, mean-risk optimization models, coherent measures of risk, and concept of stochastic dominance.

IE 540 Introduction to Financial Engineering
Financial markets (bonds, stocks, futures, forwards, options, interest rates and their term structures), models of security prices (Brownian motion, geometric Brownian motions, Ornstein-Uhlenbeck processes, Cox-Ross-Rubinstein binomial model, Merton-Black-Scholes model), pricing and hedging financial derivatives (Itô’s rule, stochastic integration, diffusion processes, probabilistic solutions of PDEs, no-arbitrage pricing in a complete market of futures, forwards, European and American type options, pricing in incomplete markets), Hedging with futures and options, bond hedging, numerical methods (pricing using trees, Monte-Carlo simulations, finite-difference methods), mean-variance analysis of portfolios, value at risk, optimal consumption and portfolio strategies (formulations and solutions of appropriate dynamic programming models and Hamilton-Jacobi-Bellman equations).

IE 543 Multiple Criteria Decision Making

IE 551 Applied Statistics
Exploratory data analysis, kernel density estimation, multivariate regression, nonparametric and semiparametric regression, scatterplot smoothing, linear mixed models, logistic regression, recursive partitioning, anova, ancova, hidden Markov models, dynamic linear models, graphical models, principal component analysis. Applications on real datasets using statistical software.

IE 561 Manufacturing Systems
Application of systems analysis and industrial engineering to the design, planning, and analysis of manufacturing systems. Characteristics of flexible manufacturing systems (FMS). Elements of systems and their interaction with each other. Consideration of technical and economic aspects of equipment and process design. Integration aspects of the elements of manufacturing systems.

IE 563 Game Theory with Applications in Operations Management
Introduction to Game Theory: Pre-commitment, the normal form, the extensive form; static games with complete information: pure strategy Nash equilibrium, mixed strategy; dynamic games with complete information: sub-game perfect equilibrium; games with incomplete information: Bayesian Nash equilibrium, perfect Bayesian Nash equilibrium; applications: oligopoly, supply chain management, queueing, competitive location.
IE 568 Theory of Pricing and Revenue Management

IE 571 Analytical Models for Supply Chain Management
Theoretical and practical issues in the design and management of the supply chain. Logistic network configuration, risk pooling and multi-echelon inventory systems, value of information and bullwhip effect in supply chains, coordination of the supply chain using contracts, distribution strategies and strategic alliances for the supply chain and product design for supply chain efficiency.

IE 573 Theory of Machine Scheduling

IE 574 Location and Layout Optimization
Single or multiple facilities location in the plane with minimum or minimax criteria. Discrete or continuous layout optimization. Single facility network location. Applications in public service, production, distribution, warehousing, emergency service and flexible manufacturing.

IE 577 Facility Location on Networks
Applications, modeling, theory and algorithms for optimal location of service facilities on distribution, transportation and communication networks. The course progresses from simple models to complex models. Well-known median and center problems as well as other models will be covered. Theory and algorithms will also be given for sensitivity and parametric analysis and time dependent location/relocation. The course ends with a discussion of areas open to research.

IE 580 Design and Analysis of Experiments
Basic design for scientific and industrial experiments: single-factor and multiple-factor; completely randomized designs, randomized blocks, incomplete blocks, orthogonal contrasts, general regression approach, Latin squares, quantitative factors. Use of statistical packages.

IE 586 Computational Optimization

IE 590 Research Topics in IE and OR
Seminars on research topics in industrial engineering and operations research.

IE 599 Master's Thesis
Seminars on research topics in industrial engineering and operations research.

IE 612 Graph Theory Algorithms

IE 613 Advanced Linear Programming

IE 614 Nonlinear Programming

IE 616 Combinatorial Optimization
Polyhedral combinatorics, integral polyhedra, polarity, blocking and anti-blocking theory, total dual integrality, matroids, matchings, TSP, vehicle routing, linear ordering, polyhedral approach to NP-Hard problems.

IE 660 Performance Analysis of Manufacturing Systems
Design and performance issues in production, transfer lines, production/inventory systems, networks of production/inventory systems, and flexible manufacturing systems. Phase-type processing times, failures and service completion processes. Buffering and blocking issues. Decomposition methods. Control policies in pure inventory and production/inventory systems.

IE 674 Advanced Models of Facility Location
Location theory, algorithms, and analysis for joint optimization of where to locate facilities and how to distribute flows. P-center and p-median problems. Single or multi-stage distribution systems. Capacitated and uncapacitated facility location. Relocation, stochastic location, and location with inexact data.

IE 681 Forecasting and Time Series Analysis

IE 690 Advanced Research Topics in IExOR
Seminars on research topics in industrial engineering and operations research.

IE 691 Research Practice
An introduction to research techniques in industrial engineering and operations research for the direct Ph.D. program students; a written individual research report requirement under the supervision of a faculty member.

IE 699 Ph.D. Dissertation

SAMPLE OF RECENT PUBLICATIONS
• U. Arikan, S. Gurel, M.S. Akturk, “Flight network-based approach for integrated airline recovery with cruise time control”, Transportation Science (Forthcoming)
• H. Gurkan, A. Tula, M.S. Akturk, “Automated robotic assembly line design with unavailability periods and tool changes”, European J of Industrial Engineering, 10, 499-526 (2016)


• E.Z. Demirci, N. Erkip, “Designing an intervention strategy for public-interest goods - The California electric vehicle market case”, Omega - Int J of Management Science (Forthcoming)


• M.R. Taner, B.Y. Kara, “Endogenous Effects of Hubbing on Flow Intensities”, Networks and Spatial Economics (Forthcoming)

• O. Yilmaz, B.Y. Kara, U. Yetis, “Hazardous waste management system design under population and environmental impact considerations”, J of Environmental Management (Forthcoming)


• B. Yildiz, O.E. Karasan, “Regenerator location problem in flexible optical networks”, Operations Research (Forthcoming)


• U. Koc, A. Toptal, I. Sabuncuoglu, “Coordination of Inbound and Outbound Transportation Schedules with the Production Schedule”, Computers and Industrial Engineering (Forthcoming)


• B. Rudloff, F. Ulus, R. Vanderbei, “A parametric simplex algorithm for linear vector optimization problems”, Mathematical Programming (Forthcoming)


• V. Bayram, B.C. Tansel, H. Yaman, “Compromising system and user interests in shelter location and evacuation planning”, Transportation Research B, 72, 146-163 (2015)


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Faculty Profile:
Dr. Savaş Dayanık,  
Associate Professor,  
Department of Industrial Engineering

Savaş Dayanık received a B.S. (1994) and an M.S. (1996) in industrial engineering from Bilkent University and a Ph.D. (2002) in applied probability from Columbia University. After serving on the faculty of Princeton University from 2002 to 2009, he joined Bilkent University. He was a visiting scholar at Carnegie Mellon University in 2015-2016. His research interests are in applied probability, stochastic modeling, and statistical learning. High work on optimal stopping and change detection were recognized with George Nicholson Student and Junior Faculty Interest Group Paper Awards by the Institute for Operations Research and the Management Sciences and with the Tweedie New Researcher Award by the Institute of Mathematical Statistics. His research has been supported by grants from the NSF, AFOSR, and TÜBİTAK. His papers have appeared in *Mathematics of Operations Research, Annals of Operations Research, Stochastic Processes and Their Applications, Annals of Applied Probability, and IEEE Transactions on Information Theory.*

Faculty Profile:  
Dr. Mustafa Ç. Pınar,  
Professor,  
Department of Industrial Engineering

Mustafa Ç. Pınar graduated from Boğaziçi University in 1987 with a B.Sc. degree in industrial engineering. He obtained M.Sc. and Ph.D. degrees from the University of Pennsylvania in 1989 and 1992, both in systems engineering. After working as a postdoctoral fellow at the Institute of Numerical Analysis at the Technical University of Denmark from 1992 to 1994, he joined Bilkent University in 1994. He has held visiting positions at the Université Libre de Bruxelles and Université Catholique de Louvain in Belgium, Princeton University, Université Paul Sabatier, Toulouse, France, University of l’Aquila, and University of Milano, Italy.

He is associate editor for the EURO Journal on Computational Optimization and topical editor in financial engineering of the Wiley Encyclopedia of Management Science and Operations Research. He is the recipient of 1997 TÜBİTAK Incentive Award in Engineering and a Fulbright Senior Scholarship in 2007. His research interests are in methodology of numerical and robust optimization with applications.
The Department of Mechanical Engineering has strong research expertise in the areas of design, manufacturing, dynamics and control, computational mechanics, tribology, microfluidics, micro/nano robotics, nanotechnology, acoustics and noise control and their applications to the automotive, aerospace and other industrial sectors. Most research projects are conducted in collaboration with institutions in the US and Europe. The Department has introduced several research areas consistent with the strengths of Bilkent University, with a view to developing new and important technologies in Turkey. These include microsystems and their design and manufacturing and novel computational methods that can address the multiscale nature of the related technological challenges. Additionally, plans are underway to develop bioinspired sensors and actuators through learning from those that have evolved in nature. Nanotechnology research focusing on the development of nanometer-scale electromechanical systems and advanced scanning probe microscopy (SPM) methods are also being pursued.

**FACULTY**


**MEHMET Z. BAYKARA**, Assistant Professor. Ph.D., Mechanical Engineering and Materials Science, Yale University, 2012. Atomic force microscopy and spectroscopy, scanning tunneling microscopy, nanotribology, surface science.


**MELİH ÇAKMAKCI**, Assistant Professor. Ph.D., Mechanical Engineering, University of Michigan, 2009. Dynamic systems and control theory, design and development of vehicle control systems and smart mechatronic components.

**BARBAROS ÇETİN**, Assistant Professor. Ph.D., Mechanical Engineering, Vanderbilt University, 2009. Microfluidics, lab-on-a-chip technology, electrokinetic transport, microscale heat transfer, partial flow modeling.


**M. SELİM HANAY**, Assistant Professor. Ph.D., Physics, California Institute of Technology (Caltech), 2011. Nanoelectromechanical systems, mass sensing, biosensors, microwave sensors.


**İLKER TEMİZER**, Associate Professor. Ph.D., Mechanical Engineering, University of California, Berkeley, 2005. Computational mechanics, thermodynamics of homogenization, contact mechanics, multiscale modeling.


**MASTER OF SCIENCE IN MECHANICAL ENGINEERING**

**Admission:** Applicants are required to have a B.S. degree in mechanical engineering or a related field of science or engineering. Students with a B.S. degree in an area other than mechanical engineering may be required to take certain undergraduate courses in order to acquire the necessary background in the field. Evaluation of applicants is based on their ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı/Academic Personnel and Postgraduate Education Entrance Examination) scores, past academic records, reference letters, and an interview. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of another country may take the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of satisfactory knowledge of English.

**Degree Requirements:** In addition to completing at least 21 credit units of course work, the M.S. degree candidate must prepare and successfully defend a thesis. The expected duration of study for the M.S. degree is 4 semesters; the maximum duration is 6 semesters.
DOCTOR OF PHILOSOPHY IN MECHANICAL ENGINEERING

Admission: All applicants are required to have a B.S. degree in mechanical engineering or a related field of science or engineering. Evaluation of applicants is based on their ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı Academic Personnel and Postgraduate Education Entrance Examination) scores, past academic records, reference letters, and an interview. Applicants who are not Turkish citizens and Turkish citizen applicants who are residents of another country may take the GRE (Graduate Record Examination) instead of the ALES. All nonnative speakers of English are required to submit proof of satisfactory knowledge of English.

Degree Requirements: The completion of 21 credit units of course work beyond the M.S. level is required. Ph.D. candidates must pass a qualifying exam, typically in their fourth semester, and then must prepare a dissertation proposal. Preparation and defense of a dissertation based on original research is the centerpiece of the program. The standard duration of study for the Ph.D. degree is 8 semesters for students who enter the program with an M.S. degree; the maximum duration is 12 semesters.

COURSE DESCRIPTIONS

ME 500 Integrated Product Development
The process of new product development from an interdisciplinary standpoint. A one-semester project course involving the collaborative team effort from engineering design to business plan.

ME 501 Mathematical Techniques in Mechanical Engineering

ME 503 Numerical Methods in Mechanical Engineering
This course emphasizes numerical methods to solve differential equations that are important in Mechanical Engineering. Procedures will be presented for solving systems of ordinary differential equations and boundary value problems in partial differential equations. Students will be required to develop computer algorithms and employ them in a variety of engineering applications.

ME 511 Fluid Mechanics
Development and application of control volume forms of mass, momentum and energy conservation laws, differential forms of these laws in Eulerian and Lagrangian coordinates, and Navier-Stokes equations. Applications to problems in incompressible and compressible laminar flows, boundary layers, hydrodynamic lubrication, transient and periodic flows, thermal boundary layers, convective heat transfer, and aerodynamic heating.

ME 516 Tribology Friction, Lubrication and Wear
Introduction to the field of tribology. Fundamental principles of friction, lubrication, and wear from a mechanical engineering point of view. Surface roughness, contact between surfaces, adhesion, macroscopic laws of friction, fluid film lubrication, boundary lubrication, wear mechanisms, nanotribology.

ME 523 Molecular Simulation of Materials
Review of continuum field theories, atomistic potentials, molecular statics, discrete-to-continuum transition, finite element implementation, calculation of various material properties.

ME 525 Introduction to Nanomechanics

ME 543 Sound and Vibration

ME 550 Continuum Mechanics
Introduction to the fundamental concepts and tools for mechanics. Overview of tensor calculus, the kinematics of deformation, concepts of stress, strain, linearization, objectivity and the balance laws for mass, momentum and energy. Materials modeling aspects such as constitutive laws and material symmetry applications to solid and fluid mechanics.

ME 552 The Finite Element Method

ME 555 Cellular Biomechanics
This course discusses how mechanical quantities and processes such as force, motion, and deformation influence cell behavior and function, with a focus on the connection between mechanics and biochemistry. Specific topics include: (1) the role of stresses in the cytoskeleton dynamics as related to cell growth, spreading, motility, and adhesion; (2) the generation of force and motion by motor molecules; (3) stretch-activated ion channels; (4) protein and DNA deformation; (5) mechnanochemical coupling in signal transduction. If time permits, we will also cover protein trafficking and secretion and the effects of mechanical forces on gene expression. Emphasis is placed on the biomechanics issues at the cellular and molecular levels; their clinical and engineering implications are elucidated.

ME 557 Metal Cutting Principles
The basic principles of metal cutting. The mechanics of metal cutting, heat generation during metal cutting, modern cutting materials, tool life and tool wear, cutting fluids, surface roughness generated by cutting actions, chip control, economics of cutting, chatter vibration, abrasive machining and non-conventional machining processes.

ME 565 Dynamics
Kinematics of particles and rigid bodies; dynamics of a particle, systems of particles and rigid bodies; central force fields, orbits and trajectories variable mass systems; Lagrange’s equations of motion; Hamilton’s Principle; variational methods; and applications to dynamics problems and the fundamentals of gyroscopes.

ME 571 Advanced System Modeling
Modeling of linear and nonlinear dynamical systems that have components from mechanical, electrical, chemical, thermal and fluidic domains. State space models, interaction between domains, time and frequency domain analysis. Control system design using root locus and bode plots.
ME 575 Micro/Nano Robotics
This course focuses on the design, modeling, fabrication, and control of miniature mobile robot and micro/nano-manipulation systems for graduate and upper level undergraduate students. It provides an overview of the state-of-the-art micro- and nanoscale sensors, actuators, manipulators, energy sources, robot design, and control methods. It requires active student participation, interaction, and in-class discussions. In addition to the basic background, it includes many case studies of current miniature robots and micro/nano-systems. Challenges and future trends, and potential applications. The course requires a final project involving novel theoretical and/or experimental ideas for micro/nano-robotic systems with a team of students. Depending on the equipment availability, these projects can also involve hands-on experience and experimental demonstrations.

ME 576 Linear Control System Design

ME 578 Vehicle Control Systems
Design and analysis of vehicle control systems such as cruise control, traction control, active suspensions, and advanced vehicle control systems for Intelligent Vehicle-Highway Systems (IVHS). Human factor considerations such as driver interfaces. Fuel Cell and Hybrid Electric Vehicle Control Systems.

ME 579 Adaptive Control Systems
Control systems with undetermined or time-varying parameters, theory and application of self-tuning and model reference adaptive control for continuous and discrete-time deterministic systems, methods for estimation and control, stability of nonlinear systems, adaptation laws, and design and application of adaptive control systems.

ME 580 Introduction to MEMS and Micro Systems
Analysis of microelectromechanical systems (MEMS), design of microsystems, components of MEMS devices such as beams, folded suspensions and their analysis — design metrics, beams as micromechanical springs, clean room fabrication techniques, MEMS sensors, accelerometers, gyroscopes, resonant mass/force sensors, MEMS actuation methods, measurement and noise analysis of MEMS devices.

ME 582 Fundamentals of Design for Reliability

ME 590 Mechanical Engineering Seminar
Participation in university-wide departmental research seminars. Discussion of scientific and technological aspects with supervising faculty.

ME 599 Master's Thesis

ME 615 Microfluidics
The fluid dynamical phenomena underlying key components of "lab on a chip" devices. Practical aspects of microfluidic device operation through hands-on laboratory experience, computer simulations of microscale flows, and reviews of recent literature in the field. Ways of optimizing device performance based on knowledge of the fundamental fluid mechanics. Selected topics will be covered in more detail through a semester project. Pressure-driven and electrokinetically-driven flows in microchannels, surface effects, micro-fabrication methods, micro/nanoparticles for biotechnology, biochemical reactions and assays, mixing and separation, two-phase flows, and integration and design of microfluidic chips.

ME 631 Conductive Heat Transfer
Focuses on exact (separation of variables, integral transform techniques and Green’s function method) and approximate analytical methods (integral method and variational formulation) to solve problems of conduction heat transfer. Covered topics include heat conduction in Cartesian, cylindrical and spherical coordinates at steady state as well as the transient processes, steady periodic problems, Duhamel’s theorem, heat conduction through composite medium, heat conduction with a moving heat source.

ME 657 Nano/Micro Manufacturing
Lithography, laser processes, mechanical micro-manufacturing, measurement techniques, ultrasonic micromachining, micro-electrodischarge machining, micro-electrochemical machining, e-beam and ion-beam machining, and micro-stereolithography techniques are surveyed. The physical principles; material capability, geometric capability, and other advantages/disadvantages of these techniques. Students are required to complete a final project.

ME 690 Mechanical Engineering Seminar
Participation in university-wide departmental research seminars. Discussion of scientific and technological aspects with supervising faculty.

ME 699 Ph.D. Dissertation

SAMPLE OF RECENT PUBLICATIONS


• C. Yavuz, S.N.B. Oliae, B. Cetin, O. Yesil-Celiktas, “Sterilization of PMMA microfluidic chips by various techniques and investigation of material characteristics”, J of Supercritical Fluids, 107, 114-121 (2016)


• A. Javili, S. Saeb, P. Steinmann, “Aspects of implementing constant traction boundary conditions in computational homogenization via semi-Dirichlet boundary conditions”, Computational Mechanics (Forthcoming)

• A. Esmaeili, P. Steinmann, A. Javili, “Coupled thermally general imperfect and mechanically coherent energetic interfaces subject to in-plane degradation”, J of Mechanics of Materials and Structures (Forthcoming)

• A. Esmaeili, P. Steinmann, A. Javili, “Non-coherent energetic interfaces accounting for degradation”, Computational Mechanics (Forthcoming)


• S.N.B. Oliaei, Y. Karpat, “Investigating the influence of friction conditions on finite element simulation of microscale machining with the presence of built-up edge”, Int J of Advanced Manufacturing Technology (Forthcoming)


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Faculty Profile:
Dr. E. Yegân Erdem,
Assistant Professor,
Department of Mechanical Engineering

E. Yegân Erdem received a B.Sc. in mechatronics engineering from Sabancı University in 2006. In 2008, she obtained an M.S. degree in mechanical engineering from the University of Washington, where she worked in Karl Böhringer’s research group on developing textured surfaces for droplet transport and characterization of a walking microrobot. She received a Ph.D. from the Department of Mechanical Engineering at the University of California, Berkeley, in May 2013 with minors in materials science and electrical engineering. During her doctoral studies, she worked on the development of microfluidic systems for controlled synthesis of nanoparticles in Albert Pisano’s and Fiona Doyle’s research laboratories. Dr. Erdem joined Bilkent University in 2013. Her research interests include microfluidics, MEMS, nanomaterials, and nanosensors. She has published in journals such as *IEEE MEMS, Advanced Materials, Small, Applied Physics Letters*, and *Lab on a Chip*. She was a recipient of the Jane Lewis and Berkeley Mechanical Engineering Fellowships.

Faculty Profile:
Dr. İlker Temizer,
Associate Professor,
Department of Mechanical Engineering

İlker Temizer received a B.S. degree (2001) from Boğaziçi University and M.S. (2003) and Ph.D. (2005) degrees from the University of California, Berkeley, in mechanical engineering. Subsequently, he joined the Institute of Continuum Mechanics of Leibniz University at Hannover as a postdoctoral researcher. He has been a faculty member at Bilkent University since 2010.

Dr. Temizer leads the Computational Multiscale Mechanics Laboratory (CMML), in which research efforts are focused on the theoretical and numerical aspects of computational mechanics associated with multiscale–multiphysics modeling strategies for heterogeneous materials and interfaces. Funded by Turkish and German research foundations as well as by the European Union, his research has led to numerous publications in collaboration with researchers from the US, Europe, and Japan. Dr. Temizer is a recipient of the European Commission’s Marie Curie career grant and young investigator awards from the Science Academy (BAGEP) and the Mustafa Parlar Foundation.
The Graduate School of Education offers four graduate programs which are tailored to meet the needs of those who wish to become classroom teachers and also those who are already practitioners in educational institutions. Three of these programs are in the area of Curriculum and Instruction. A brief description of all four programs follows:

The M.A. in Curriculum and Instruction is designed for practicing teachers who are in positions of middle management in schools, or intending to move to such positions in the near future and thus become educational leaders. It enables participants to develop the knowledge and skills to improve their own practice and assist in the professional development of colleagues in their area.

The M.A. in Curriculum and Instruction with Teaching Certificate program is a two-year full-time master’s degree program. It awards a master’s degree together with a teaching certificate that qualifies graduates to teach in high schools. It also awards an International Baccalaureate Certificate in Teaching and Learning. The program includes: courses required by the Turkish Council of Higher Education (YÖK) for qualified teacher status; additional education courses; and a thesis. Students with degrees in the following subject areas are accepted into the program: Turkish language and literature, English, biology, mathematics, and physics.

The Ph.D. in Curriculum and Instruction is a doctoral program for practicing teachers and other educators with at least three years of teaching experience. Participants gain in knowledge and skills, and are expected to contribute to the advancement of knowledge through independent and original research.

The M.A. in Teaching English as a Foreign Language (TEFL) is a one-year full-time intensive master’s program aimed at those already teaching English in Turkish universities.

**FACULTY**

**H. NECİMİ AKŞİT**, Assistant Professor. Ph.D., Educational Sciences, Middle East Technical University, 1998. Educational administration, teacher education, curriculum and instruction.

**TİJEN AKŞİT**, Assistant Professor and Acting Director of the School of English Language. Ph.D., Educational Sciences, Middle East Technical University, 2006. Educational management, language teacher education, curriculum and instruction.


**ALİPAŞA AYAS**, Visiting Professor and Director of the Graduate School of Education. Ph.D., Educational Sciences, University of Southampton, 1993. Curriculum development, teacher education, concept development, assessment and evaluation.


**İLKER KALENDER**, Assistant Professor. Ph.D., Secondary Science and Mathematics Education, Middle East Technical University, 2011. Computerized adaptive testing procedures, detection of creating/aberrant response patterns through software, educational technology.


**DENİZ ORTAÇTEPE**, Assistant Professor. Ph.D., Curriculum and Instruction, State University of New York, 2011. Second language socialization, professional development of teachers, social identity in ESL/EFL.

**RASİM ÖZYÜREK**, Assistant Professor. Ph.D., Turkish Language Teaching, Baku State University, 1998. Turkish language teaching methods.

MASTER OF ARTS IN CURRICULUM AND INSTRUCTION

The program consists of eight core courses (24 credits), which together cover the educational foundations of a school community, and the learning and teaching that go on there. Theory and practice are interlinked. Students look at their own experience and expertise in the context of educational theory, which itself will inform their practice in the future. Work in the classroom or in other school contexts is an essential feature of the program.

Program Goals:
- To enable participants to meet the needs of the educational institutions in which they work, and to allow them to make effective and up-to-date contributions to quality education in Turkey at the primary and secondary levels
- To encourage school-based research
- To permit participants to continue working in their institutions while working toward an advanced degree

Admission:
- Qualified teacher status
- At least two years of teaching experience in an elementary, middle or high school
- Official transcript from the institution that awarded the applicant's undergraduate degree
- Minimum 2.5 cumulative GPA during undergraduate studies
- ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı/Academic Personnel and Postgraduate Education Entrance Examination) or GRE (Graduate Record Examination): minimum ALES score of 60; GRE combined score of at least 295 and 3.5 in analytical writing
- One of the following English proficiency scores:
  - TOEFL (iBT): 87
  - IELTS: 6.5 (minimum 5.5 on each section)
  - Bilkent PAE: C
- Two reference letters: one from the applicant's school director; stating approval to attend the program; and one from a person familiar with the applicant's academic ability.

MASTER OF ARTS IN CURRICULUM AND INSTRUCTION WITH TEACHING CERTIFICATE

The two-year program in teacher education awards a master's degree in Curriculum and Instruction, together with a teaching certificate that qualifies graduates to teach in high schools. It also awards an International Baccalaureate Certificate in Teaching and Learning.

The program's teacher education courses cover the required pedagogical knowledge and skills. Subject area and liberal arts courses broaden and extend students' understanding of their own subject area as well as educational philosophy. Emphasis is placed on international dimensions, including the International Baccalaureate and IGCSE curricula. A central feature of the program is students' experience in schools. Each semester, students have an internship in a leading high school in Ankara, Istanbul, or Izmir, observing classes and teaching. The program also includes an internship consisting of five weeks at the University of Cambridge Faculty of Education and schools in Cambridge or nearby. Here, student teachers experience a different system of education and teacher training, and gain a wider perspective on teaching, classroom interactions, and life in another country.

Admission:
- Minimum score of 60 on the verbal section of the ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı/Academic Personnel and Postgraduate Education Entrance Examination)
- One of the following English proficiency scores (except English teacher education track):
  - TOEFL (iBT): 70
  - IELTS: 5.5
  - Bilkent PAE: C
- Minimum 2.5 cumulative GPA in one of the following four-year undergraduate degrees:
  - Turkish Language and Literature (Turkish Language and Literature, Contemporary Turkish Dialects and Literatures)
  - English (English Language and Literature, American Culture and Literature, Translation and Interpretation, English Linguistics)
  - Biology (Biology, Molecular Biology and Genetics)
  - Mathematics (Mathematics, Mathematics-Computer Science)
  - Physics (Physics, Physics Engineering)

Applicants will be evaluated on the basis of their academic records, ALES scores, proficiency in English, letters of recommendation, and an interview.

Degree Requirements: Students must complete the required curriculum with a minimum GPA of 3.00 overall, as well as satisfactorily completing the school experience and teaching practice at partner schools.

MASTER OF ARTS IN TEACHING ENGLISH AS A FOREIGN LANGUAGE (MA TEFL)

The Master of Arts Program in Teaching English as a Foreign Language at Bilkent University was established in 1988 to enhance the quality of English language instruction in Turkey. Bilkent University, the Turkish Fulbright Commission and the United States Embassy cooperated to establish the program.

Program Goals: Graduates of the Program benefit in many ways. In addition to the opportunity to study at an English-medium university and thereby improve their English, the program strives to provide graduates with the following:
- Improvement of classroom teaching and testing based on a thorough understanding of linguistic theory and language learning;
- Enhanced understanding of general educational principles;
- Improved familiarity with current developments in educational technology;
- Development of research skills for the systematic analysis of issues related to language teaching; and
- Opportunity to develop professional contacts within the Turkish and international TEFL communities.

Admission: Admission to the Bilkent MA TEFL Program is competitive. The program is demanding in its academic requirements. Applicants accepted to the program are expected to maintain their personal commitment to academic and professional advancement throughout the heavy load of courses, assignments, and a thesis compressed into eleven months. Applicants must meet the following criteria:
- Have at least two years of full-time EFL/ESL teaching experience
- Proof of a relevant undergraduate degree
- Language proficiency: TOEFL (iBT) 87 or IELTS (academic module) 6.5 (minimum 5.5 in each section), or Bilkent PAE: C
- A minimum ALES (Akademik Personel ve Lisansüstü Eğitimi Giriş Sınavı/Academic Personnel and Postgraduate Education Entrance Examination) score of 60 (verbal), or minimum combined GRE (Graduate Record Examination) score of 295 and 3.5 in analytical writing
- Two signed and sealed letters of recommendation
- Academic transcripts (min. CGPA 2.75/4)
- A personal statement (about 1000 words)
The application process also includes an English proficiency test and a personal interview. Candidates are expected to make appropriate arrangements with their home institutions for leave. It is the candidate’s responsibility to be sure his or her institution will grant a release with support for the year’s program.

**Degree Requirements:** The Bilkent MA TEFL Program includes successful completion of the required courses and a thesis, to be completed in one academic year and the following summer. The curriculum is based on the theoretical and practical concerns of teaching English as a foreign language in Turkey and other foreign language settings.

**DOCTOR OF PHILOSOPHY IN CURRICULUM AND INSTRUCTION**

The Ph.D. in Curriculum and Instruction is tailored to meet the needs of professional practitioners in education, including classroom teachers, who wish to continue their own education while still working as educators. It is designed for practicing educators with at least two years of teaching experience.

Applicants should demonstrate clear goals, evidence of interest in research, evidence of background and experience in the area of curriculum and instruction, and strong writing skills.

**Admission:**
- Qualified teacher status with a minimum two years of teaching experience
- Master’s degree (with thesis) from an accredited program, with a minimum GPA of 3.0/4.0
- ALES (Akademik Personel ve Lisansüstü Eğitim İ giriş Sınavı/Academic Personnel and Postgraduate Education Entrance Examination) or GRE (Graduate Record Examination): minimum ALES score (equally weighted) of 60; GRE score of at least 305 (or 1,000 verbal and quantitative combined) and 4 in analytical writing
- YDS: min 55
- One of the following English proficiency scores:
  - TOEFL (IBT) 87,
  - Bilkent PAE: C
- Two signed and sealed letters of recommendation (from individuals able to address the applicant's academic abilities and potential for doctoral study)
- Personal statement (1,000-1,250 words), to include purpose and objectives for undertaking graduate study, and description of prior research experience, research interests, and career goals
- Applicants may be asked to come for an interview

**Degree Requirements:** Students accepted into the program must complete at least 12 credit hours of academic preparation and 24 credit hours of doctoral course work. A cumulative GPA of at least 3.0 must be maintained for Ph.D. courses. Upon successful completion of the course work, a Ph.D. student will take written and oral qualifying exams. The student will then submit a research proposal to guide student learning and to measure objective and complex outcomes, and analyzing data. Action research as a qualitative approach to research will be included.

**CI 501 Learning, Development, and the Cultural Context for teaching**
The course will focus on the holistic development of school students in their current cultural context. Topics for study include the development of cognitive abilities, critical, creative, and imaginative thinking, Gardner’s multiple intelligences, and cognitive and affective taxonomies. The sociology of educability will be considered: the effect of the family and home environment on a child’s development and ability to learn and achieve, as well as the impact of other social factors on development.

**CI 502 Managing the Classroom**
The course will give a general overview of the social and psychological factors which determine or affect student behavior in educational settings. It includes systems for classroom management to maximize student learning outcomes, and techniques for meeting the varied needs of learners in a classroom, with a view to increasing motivation, managing groups, orienting students, and allowing the quality use of time in the classroom.

**CI 503 Educational Leadership and School Development**
The course considers leadership skills for those who may take on administrative roles in a school. It includes skills required for effective staff motivation and the creation of a leadership team, problem analysis and decision-making, good communication, strategic planning, implementing change, utilizing a team process, and managing crises in school. In addition, leadership styles, principles of adult learning and adult motivation theory, self and peer assessment, plus coaching teachers toward increased effectiveness will be included.

**CI 504 Contemporary Issues in Curriculum Development and Evaluation**
The course will examine curriculum theory for elementary and high school courses of study. It will consider current trends and issues in curriculum development, the determinants of the curriculum, and conditions for curriculum change. The evaluation of the implementation of new curricula will be included. The role of the teacher, the school, other members of the school community, and the values and attitudes of society, in curriculum implementation will be studied.

**CI 506 IB and IGCSE Curricula**

**CI 507 Educational Research**
The course is designed to introduce key concepts in quantitative and qualitative research in general. It will explore the different research methods used in educational research. Topics will include formulating research questions, reviewing the literature, synthesizing sources, selecting appropriate research designs, sampling, designing valid and reliable instruments for data gathering, and analyzing data. Action research as a qualitative approach to research will be given particular emphasis.

**CI 508 Assessing Student Learning and Progress**
The course will focus on formative and summative evaluation at elementary and high school levels. It will review fundamental concepts, principles and uses of testing and assessment for monitoring the progress and achievement of school students of all ages. Participants will gain experience of devising effective means of formative assessment and recording progress, and in writing specific learning outcomes. They will compose tests, writing items to measure objective and complex outcomes, and analyzing items and examinations to guide student learning and to inform practice.
CI 509 Thesis Seminar
The thesis seminar is intended to guide the Masters students in their thesis work. Research methods, literature reviews, elaboration of topics, organization of material in relation to each student's research will be discussed, leading to a thorough consideration of, and guidance in, the preparation of the thesis. Students will make presentations of their research to date in order to share their progress and learn from each other.

CI 511 Curriculum in an international Context
The course examines education, specifically education in schools and the school curriculum, in several countries. In particular, course participants study and compare the International Baccalaureate (IB) system of curricula and assessment from primary to high school, and the nature and role of international education. Such study includes the nature of the IB diploma program; planning, teaching and assessing IB courses; together with critical thinking and the theory of knowledge. The International General Certificate in Secondary Education (IGCSE) is also considered. International large scale comparative studies are included, particularly the findings from the Programme for International Student Assessment (PISA).

CI 512 Written Academic Discourse
The course focuses on developing essential research and language skills. It provides opportunities for participants to learn the APA system of referencing, analyze research articles, and start preparing the introduction and literature review sections of their thesis.

CI 513 Statistics
Descriptive statistics; measures of central tendency, measures of variability, measures of relative standing (percentile, z-scores), graphing data, sampling, point and interval estimation, sampling distributions, hypothesis testing, one and two sample tests of hypothesis for means (t-tests), introduction to analysis of variance, statistical software applications.

CI 514 Curriculum Development and Evaluation
This course is designed to examine approaches to curriculum development and evaluation. It considers curriculum theorizing, curriculum models and curriculum planning at different levels. The course also provides evaluation models and techniques to analyze curriculum and its components. Procedures and issues for curriculum development and evaluation, factors that impact curriculum, and curriculum decision making are also studied.

CI 515 Trends and Issues in Instruction and Assessment
This course will provide participants with an understanding of current trends and issues in instruction and assessment. It will explore procedures for instructional design, delivery, and evaluation. The course will also survey current methods and techniques used to assess student performance. Participants will critically reflect on, and evaluate, current practices and future directions.

CI 516 - Child and Adolescent Psychology
The course provides an introduction to the milestones of development from childhood through adolescence to adulthood. It covers developmental research methods, the biological and social contextual contributions to individual development, and the fundamental theories of cognitive and psychological development (such as those of Piaget and Erickson). These theories are integrated into a consideration of physical, cognitive, social and emotional development in childhood and adolescence. Aspects of developmental research which focus on the implications for parenting and education are discussed.

CI 517 - Learning Theories and Practice
The course focuses on theories of human learning and their implications for education, how we develop and acquire knowledge and skills. It will present behaviorist, social, cognitive and constructivist learning theories, and consider their contribution to teaching practices and to the understanding of students’ learning processes.

CI 518 - Science of Learning
The science of learning involves examining how data is learned, remembered, processed, interpreted and applied. The course will also show connections between the functions of the brain and effective learning/teaching strategies. The course begins with a study of the brain itself, including its anatomy, physiology and health, and how its structure and working relate to learning. Awareness and the biology of conscious thought will be explored through research related to brain development, information processing, memory and retention, transferring learning, and critical thinking. Participants will review this research, and examine how it applies to effective learning and teaching in their subject areas. A related aim of the course is for trainee-teachers to identify teaching methodologies, strategies and activities that best assist learning.

CI 532 - Written Academic Discourse
This course focuses on developing essential skills for effective presentation of academic language in written discussion. Students learn the APA system for referencing, and prepare their proposals including the introduction, literature review and methodology of their thesis.

CI 601 Instruction: Perspectives and Practice
The course focuses on contemporary instructional theories and design models. Participants will also examine instructional strategies and effective delivery methods. Topics will include information processing, learning contracts, simulations, inquiry, learner-based instruction, and digital literacy.

CI 602 Curriculum: Perspectives and Practice
The course examines major themes and concepts relevant to curriculum theory and research. Participants will critically analyze models of curriculum theory through philosophical, psychological, sociological and historical perspectives.

CI 603 Practicum in Curriculum Development and Evaluation
The course provides experience in developing and evaluating curricula. It introduces technical and non-technical approaches to development and evaluation. Participants will be expected to pursue a field study in their own schools.

CI 604 Educational Statistics
This course introduces descriptive and inferential statistical concepts needed to conduct quantitative inquiry in educational statistics. Participants will be expected to analyze cases, and determine and apply appropriate statistical procedures, using the Statistical Package for Social Sciences (SPSS). They will also interpret and report the results.

CI 605 Educational Research Methods
The course gives an introduction to the logic of social scientific inquiry and exposure to the methodology, techniques and ethics of research. Participants will focus on how to formulate research problems, collect and analyze data, and present findings, considering various research designs. The use of a theoretical framework in conducting research in educational settings will be emphasized.

CI 606 Qualitative Research Methods
This course is intended to provide participants with the basic skills needed to conduct qualitative research. It will focus on methods of qualitative data collection and analysis. Participants will be expected to develop and implement data collection and analysis tools to explore and address educational issues.

CI 608 Current Trends and Issues in Educational Technology
The aim of this course is to explore current trends and
related issues in educational technology. The overall theme of the course considers the many different ways educational technology is used in education; types of available technology, teachers’ and students’ use of technology, and challenges for the education community at large will be included. Applications, such as Web 2.0, multimedia, and simulations will be considered in detail. Case studies of good practice and critical evaluation utilizing related scientific research pertaining to the effectiveness of educational technology in teaching and learning will be studied. Sessions will include practical applications in the computer laboratory and students will also be expected to pursue applications relating to their field of expertise at their own time.

CI 611 Issues and Trends in Education
The course focuses on educational issues and trends at the national and global level. Participants will explore and discuss implications of policies affecting educational goals, processes and outcomes. The course involves an analysis of the micro- and macro-level issues nationally and internationally, including those concerned with structural and organizational issues, teacher-training, elementary education, secondary education, higher education, and the transitional problems between these levels.

CI 690 Dissertation Seminar
The seminar is intended to guide doctoral students as they prepare their research proposal, which requires approval by the Dissertation Monitoring Committee. The seminar follows the qualifying exam and instructs the students in the preparation of the first three chapters of the dissertation. Participants are expected to formally present their work to the group and share their experiences.

TE 509 Developmental Psychology

TE 510 Curriculum and Instruction
Basic concepts. Theoretical foundations of curriculum development in education (historical, philosophical, psychological and social foundations). Curriculum design in education and models. The process of curriculum development (planning, preparing a proposal, piloting and evaluating, ensuring continuity). Instructional principles. Importance and benefits of studying regularly and methodically. Planning instruction (unit by unit yearly plans, sample daily plans and activities). Instructional methods and techniques, and their delivery. New trends in education and instruction (for example, effective learning, multiple intelligences, constructivism, lifelong learning, creative thinking). Duties and responsibilities of teachers in improving the quality of teaching.

TE 518 Measurement and Evaluation
Role and significance of measurement and evaluation in education; fundamental concepts of measurement and evaluation, desirable qualities of measurement tools (reliability, validity, practicality), measurement tools used in education and their characteristics. Traditional tools (written examinations, short-answer tests, true-false tests, multiple choice tests, matching, oral examinations, assignments). Tools which assess multiple facets of student performance (observation, interview, performance-based assessment, portfolios, research papers, research projects, peer assessment, self-assessment, attitude scales). Use of basic statistical tools to process the results of assessment, evaluating learner outcomes, grading, development of subject area specific assessment tools.

TE 519 Classroom Management
Fundamental concepts of classroom management, classroom communication and interaction, definition of classroom management, various aspects of classroom management other than discipline, external and internal factors affecting classroom climate, models of classroom management, development and implementation of classroom rules, physical arrangement of the classroom, managing undesirable behavior, time management, class organization, developing a class environment conducive to learning (cases and suggestions).

TE 520 Instructional Technology and Materials Design
Concepts of instructional technology, characteristics of various instructional technology. Role and use of instructional technology in the process of teaching, identification of technology needs in the classroom/school, appropriate planning and management of technology use, using technology to develop 2-D and 3-D materials, developing teaching tools (worksheets, activity design, OHP transparencies, slides, visual media tools such as DVD, VCD and computer based tools). Analyzing educational software, evaluating teaching tools of varying quality, internet and distance education, principles of visual design, research pertaining to the effectiveness of teaching materials, the state of instructional technology for teaching in Turkey and the wider world.

TE 524 Guidance
Fundamental concepts, student support services, the role of guidance and counseling in student support services, principles of guidance, principles and development of guidance, types of guidance and counseling, services, techniques, organization and personnel, recent developments in the field, techniques for getting to know students, counselor-teacher cooperation, guidance duties of the teacher.

TE 528 Introduction to Educational Science
Basic concepts in education. Relationship of education to other disciplines (the philosophical, social, legal, psychological, economic and political foundations of education). History of educational science. Major trends in educational science in the 21st century; Research methods in educational science. Structure and characteristics of the Turkish Education System. Role of teachers in education. Characteristics of the teaching profession. Developments and practices in teacher education.

TE 529 Turkish Language and Literature Curriculum Review I
This course provides students with knowledge and experience to assist them to become effective Turkish Language and Literature (TLL) teachers. The major areas of TLL taught in school will be reviewed in detail and related to high school curriculum and demands made on high school teachers and students. The skills covered include knowledge of the appropriate level of subject area content and relevancy, together with a working knowledge of school TLL text books, and the application of these skills in the classroom. National, IB and IGCSE curricula will be discussed.

TE 531 English Teaching Methods I
The course explores, with practical examples, and with reference to current research, the teaching of English at high school level. It considers all relevant teaching methods, and their application to a range of teaching/learning contexts. Students will engage in extensive reflection on the methods and applications considered.

TE 532 Biology Teaching Methods I
The course explores, with practical examples, and with reference to current research, the teaching of biology at high school level. It considers all relevant teaching methods, and their application to a range of teaching/learning contexts. Students will engage in extensive reflection on the methods and applications considered.

TE 533 Turkish Language Teaching Methods
The course explores, with practical examples, and with reference to current research, the teaching of Turkish language at high school level. It considers all relevant teaching methods, and their application to a range of teaching/learning contexts. Students will engage in extensive reflection on the methods and applications considered.
TE 535 Mathematics Teaching Methods I
The course explores, with practical examples, and with reference to current research, the teaching of mathematics at high school level. It considers all relevant teaching methods and their application to a range of teaching/learning contexts. Students will engage in extensive reflection on the methods and applications considered.

TE 537 Physics Teaching Methods I
The course provides an introduction to the teaching of physics, and to the classroom techniques which may be used in the teaching of it. Specific teaching methods and strategies will be explored, together with their application to a range of teaching/learning contexts. Practical applications of the methods will be experienced through a number of activities including microteaching, project work and simulation situations. Students will be asked to engage in extensive reflection on the methods and applications considered.

TE 540 Curriculum Development in Education
This course is designed to examine approaches to curriculum development. It considers curriculum theorizing, curriculum models and curriculum planning at different levels. Procedures and issues for curriculum development and evaluation, factors that impact curriculum, and curriculum decision making are also studied.

TE 541 English Teaching Methods II
This course is a continuation of TE 531. It continues the developmental work of TE 531 in the teaching of English. Students gain further understanding of the teaching and learning methods which may be used with different groups of students, and of the context in which learning is set. There will be further practical applications and classroom experience.

TE 542 Biology Teaching Methods II
This course is a continuation of TE 532. It continues the developmental work of TE 532 in the teaching of biology. Students gain further understanding of the teaching and learning methods which may be used with different groups of students, and of the context in which learning is set. There will be further practical applications and classroom experience.

TE 543 Turkish Literature Teaching Methods
This course is a continuation of TE 533. It continues the developmental work of TE 533 in the teaching of Turkish language and literature. Students gain further understanding of the teaching and learning methods which may be used with different groups of students, and of the context in which learning is set. There will be further practical applications and classroom experience.

TE 545 Mathematics Teaching Methods II
This course is a continuation of TE 535. It continues the developmental work of TE 535 in the teaching of mathematics. Students gain further understanding of the teaching and learning methods which may be used with different groups of students, and of the context in which learning is set. There will be further practical applications and classroom experience.

TE 547 Physics Teaching Methods II
This course is a continuation of TE 537. The course provides an introduction to the teaching of physics, and to the classroom techniques which may be used in teaching. Specific teaching methods and strategies will be explored, together with their application to a range of teaching/learning contexts. Practical applications of the methods will be experienced through a number of activities including microteaching, project work, and simulation situations. Students will be asked to engage in extensive reflection on the methods and applications considered.

TE 550 Educational Psychology
The relationship between education and psychology, definition and functions of educational psychology. Basic concepts of learning and development. Physical, mental, emotional, social and ethical development. Theories of learning, a consideration of learning theories in relation to the teaching process. Effective learning. Factors affecting learning: motivation, individual characteristics, group dynamics; their effects on in-class teaching.

TE 551 School Experience I in English
TE 552 School Experience I in Biology
TE 553 School Experience I in Turkish Language and Literature
TE 555 School Experience I in Mathematics
TE 557 School Experience I in Physics
One day a week in a high school under the daily supervision of an experienced school teacher who acts as mentor. Students use structured activities which involve lesson observation and interviews to understand the organization and daily work of the school. They analyze particular teaching skills, and consider whole school issues. There is a one-hour seminar which consolidates the work done in school.

TE 560 Physics Curriculum Review
The course provides students with knowledge and experience to assist them to become effective physics teachers. The major areas of the physics curriculum taught in high schools will be reviewed in detail and related to the demands made on high school teachers and students. The topics covered include curriculum objectives, content and implementation, assessment, the school-based physics curriculum, textbooks used in schools, the national curriculum, the IGCSE curriculum, and IB curricula.

TE 561 School Experience II in English
TE 562 School Experience II in Biology
TE 563 School Experience II in Turkish Language and Literature
TE 565 School Experience II in Mathematics
TE 567 School Experience II in Physics
Students spend one day a week in a school, under the daily supervision of their mentor. They teach classes, as well as working on structured activities related to teaching and the school environment. There is a one-hour seminar which consolidates the work done in school.

TE 568 School Experience III in Physics
Students spend one day a week in a school, under the daily supervision of their mentor. They teach classes, as well as working on structured activities related to teaching and the school environment. There is a one-hour seminar which consolidates the work done in school.

TE 558 Principles and Methods of Instruction
The basic concepts of instruction. The principles of teaching and learning. The importance and benefits of instructional planning. The planning of instruction (yearly plans containing units, daily plans and sample activities). Teaching and learning strategies. Instructional methods and techniques, and their relation to practice. Instructional materials. The teacher’s roles and responsibilities in improving the quality of instruction. Teacher competencies.

TE 590 Advanced Teaching Practice
Students participate in teaching/learning activities in schools in England over a period of five weeks. They extend their pre-service teacher education studies at Cambridge University, and experience other approaches to high school student learning in an independent school in England.
TEFL 501 Second Language Acquisition
Theories of second language acquisition. Students analyze both qualitative and quantitative research studies conducted in the past 30 years.

TEFL 502 Linguistics: The Nature of Language
Foundations in linguistics with an emphasis on basic terminology, concepts, and analysis. Main topics include phonetics, phonology, morphology, syntax, semantics, and pragmatics. Discussion focuses on their relevance and application to second language acquisition and foreign language teaching, in particular, teaching English in Turkey.

TEFL 506 Sociolinguistics
Examination of linguistic variation in English among social groups due to region, socio-economic status, gender, ethnicity, and age, especially as this variation relates to language learning. Linguistic registers, standard and non-standard dialects, language attitudes, and attitudes toward language learning are also treated.

TEFL 510 Language Testing
Theoretical and practical considerations in the construction, use, and critical evaluation of both classroom and standardized tests of language proficiency. Students are acquainted with basic concepts of validity and reliability, as well as a variety of different kinds of tests and testing techniques.

TEFL 521 EFL Methodology
Discussion of the major foreign language teaching methods in their historical contexts, as well as individual language skills and integrated skills. Current areas of concern in ESL/EFL are also examined, and key EFL/ESL terminology is reviewed.

TEFL 528 Curriculum Development and Evaluation
Principles of course design, implementation, and evaluation. The role of the teacher in the curriculum process is central to the course. Small projects and papers relating to students’ experiences will provide skills in developing and evaluating curricula.

TEFL 530 Materials Development
Selection, adaptation, development, evaluation, and implementation of lesson plans, textbooks, and other materials for different teaching situations. Students become familiar with a variety of materials. Opportunities are provided for critiquing, developing, and adapting materials for a wide range of contexts and target groups.

TEFL 531 Research Methods I in Linguistics
Introduction to skills in library research and applied linguistics research methodology including the collection, analysis, and processing of data. Issues of research methodology are examined for their applicability to critiquing published research and to conducting original research in language-learning environments. Quantitative, qualitative, and mixed-methods research traditions are examined.

TEFL 532 Research Methods II in Linguistics
This course is a continuation of Research Methods in Linguistics I, and includes further detailed examination of theoretical and methodological topics in the contemporary literature on qualitative, quantitative, and mixed-methods research designs. It also explores topics in the ongoing development of applied linguistics research methodology in particular, and provides students with additional practice in the critical reading, understanding, and assessing of published research.

TEFL 554 Thesis Writing
Focus on presenting aspects of research findings in an organized and coherent manner. Students receive critical feedback from peers and their instructor on their thesis. The emphasis is on improvement of academic discourse appropriate to complete the program thesis successfully.

TEFL 555 Writing Academic Discourse
Focus on developing essential skills for effective writing. Meta-discussion of readings and exercises will help develop students’ own abilities to teach academic writing.

TEFL 556 Seminar in TEFL
In-depth exploration of and innovative approaches to topics of importance in the field of TEFL. The course may be divided into two eight-week seminars to allow expanded coverage of the issues. Specific topics to be determined by the instructor(s).

SAMPLE OF RECENT PUBLICATIONS

- A. Ateskan, J.F. Lane, “Promoting Field Trip Confidence: Teachers Providing Insights for Pre-Service Education”, European J of Teacher Education, 39, 190-201 (2016)
• F. Yaman, A. Ayas, “Assessing changes in high school students’ conceptual understanding through concept maps before and after the computer-based predict-observe-explain (CB-POE) tasks on acid-base chemistry at the secondary level”, Chemistry Education Research and Practice, 16, 843-855 (2015)

• I. Kalender, G. Berberoglu, “Can computerized adaptive testing work in students’ admission to higher education programs in Turkey”, Educational Sciences - Theory & Practice (Forthcoming)


• I. Kalender, “Profiling Instructional Effectiveness to Reveal Its Relationship”, Asia-Pacific Education Researcher, 23, 717-726 (2014)


• A. Mouratidis, A. Michou, A. Vassiou, “Adolescents’ autonomous functioning and implicit theories of ability as predictors of their school achievement and week-to-week study regulation and well-being”, Contemporary Educational Psychology (Forthcoming)


• S. Mutlu, D. Ortactepe, “The identity (re)construction of nonnative English teachers stepping into native Turkish teachers’ shoes”, Language and Intercultural Communication, 16, 552-569 (2016)


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Faculty Profile:
Dr. Jennie Farber Lane,
Assistant Professor,
Faculty of Education

Jennie Farber Lane received a B.S. in biology from Florida Southern College and master’s degrees from Columbia Teachers College and the University of Wisconsin (UW)–Stevens Point. She earned a PhD in curriculum and instruction from UW–Madison. Prior to coming to Bilkent in 2012, she was director of the Wisconsin K-12 Energy Education Program (KEEP) for 17 years. She worked through KEEP from the time of its inception in 1995 to network with energy resource providers and to develop resources and services (including online courses) that motivate teachers to integrate energy concepts into their classroom lessons. Her other work experience includes teaching public school in the US, and instructing pre-service teachers in Thailand and at the University of Wisconsin–Stevens Point.

While in Wisconsin, Dr. Lane also served on the board of directors of the Midwest Renewable Energy Association and on the research committee for the Wisconsin Environmental Education Board. She has received a number of awards, including the University of Wisconsin–Stevens Point Academic Staff Excellence Award (2003) and the Aldo Leopold Award for Excellence in Environmental Education (2006). She coauthored the Project WET Curriculum and Activity Guide, which is used throughout the world, and has published papers in journals including the Journal of Environmental Education, Energy Policy, and Environmental Education Research. Her research areas include environmental, place-based, and sustainability education.

Faculty Profile:
Dr. Aikaterini Michou,
Assistant Professor,
Faculty of Education

Aikaterini Michou obtained a master’s degree from the University of Geneva and a Ph.D. in educational sciences from the National and Kapodistrian University of Athens. She started her career in education as an elementary teacher, moving to research positions after completing her Ph.D. She worked as a research associate at the Education Research Center of Greece and as a health education coordinator. She also taught educational psychology and pedagogy in the Early Childhood Teachers Training School in Athens and graduate teacher programs.

Dr. Michou’s main research interest pertains to the contextual and personal factors that facilitate learning and development in educational settings. More specifically, her research focuses on the learner’s quality of motivation and self-regulation and their contextual and personal correlates. She has collaborated in theory-based empirical research projects with advanced quantitative methodology and has also carried out qualitative research that amalgamates the school-based and theory-based approaches. Her research projects have led to publications in journals such as the Journal of Educational Psychology, the British Journal of Educational Psychology, and Contemporary Educational Psychology. In collaboration with two other investigators, she received a 1001 TÜBİTAK grant to study longitudinally the academic success and well-being of adolescents. As a research associate at the Education Research Center of Greece, she was principal investigator for the funded project “The Development of Students’ Self-Knowledge and Creativity: A Collaborative Action Research Project” (EPEAEK).
Bilkent University is located about 12 kilometers from the center of Ankara and is connected to downtown by a free hourly bus service. The Bilkent campus occupies more than 500 hectares of land. There are three campus areas: the Main, Middle, and East Campuses, which are connected by a regularly scheduled, free shuttle bus service.

**Housing**
Accommodation for graduate students is available on campus either in dormitories or in shared apartments. All housing facilities are furnished, and bedding is provided. Most of the units are equipped with basic necessities including major appliances and kitchenware. Free high-speed Internet service is available in all units.

**Health Services**
There are two health centers, one each on Main Campus and East Campus, providing health care to all students, faculty, and administrative staff. Membership in group health insurance plans is available at reasonable rates for ongoing graduate students. The health centers are equipped with in-house laboratories as well as x-ray and ultrasound machines. Physicians and nurses are available 24 hours a day for emergency care. In addition to the full-time healthcare staff, there are also specialists available for consultation by appointment, including a dentist, a dermatologist, gynecologists, an ophthalmologist, an orthopedist, an otorhinolaryngologist, and a psychiatrist.

**Dining Facilities**
There are a number of restaurants, cafeterias, and coffee shops at the university, which serve a variety of foods and beverages throughout the day. Listed below, they offer healthy food choices and in addition provide an environment where students may socialize. (Bilkent Station and Ankuva Shopping Center, located a short walk from the campus, also feature a variety of restaurants.)

- **Cafe In:** Located near the Table d’Hôte Cafeteria on the Main Campus. An option for sandwiches, fast food, and pastries.
- **Coffee Break:** Four locations: along the pedestrian walkway on the north side of the Faculty of Economics, Administrative, and Social Sciences Building; near the School...
of Applied Technology and Management; in the Main Campus Library; and in the School of Applied Languages. Good for a quick bite, pastries, and coffee.

- **Express Café**: Located near the Faculty of Art, Design, and Architecture Building. Serves hot meals.

- **Fameo**: Located in the Faculty of Engineering Building. Offers coffee, drinks, and appetizers.

- **Fiero Café**: Located in the Faculty of Economics, Administrative, and Social Sciences Building. An option for a quick bite, pastries, and coffee.

- **Kıraç**: Located near the Sports Center and the Bookstore. Serves mainly Turkish cuisine.

- **Mozart Café**: Three locations: in the Faculty of Music and Performing Arts Building; in B Building; and in the EE Building. An option for sandwiches, salads, and pastries.

- **Sofa Cafe and Restaurant**: Located in Dorms 69 and 70. Offers various food and beverage choices.

- **Sözeri Pide Hut**: Located near the dorms. Serves Turkish pide and kebabs.

- **Speed**: Located near the Sports Center and the Bookstore. Offers a salad bar, hot meals, and fast food.

- **Starbucks Coffee**: Located in the Faculty of Business Administration Building and Faculty of Art, Design and Architecture Building. Offers a wide selection of gourmet coffee drinks and appetizers.

- **Table d’Hôte Cafeteria**: Offers mainly set menus at three locations: across from the Faculty of Engineering Building; in the Faculty of Music and Performing Arts Building; and near the School of English Language.

**Bookstore**
The University Bookstore offers a wide selection of textbooks, stationery items, greeting cards, CDs, DVDs, and national and international newspapers.
Banking and Shopping Facilities
Yapı Kredi Bank, on the Main Campus, is open during working hours, including the lunch hour. There are also a number of automated teller machines in various locations around the campuses. On the Main Campus, a grocery store sells local and imported products seven days a week. Ankuva Shopping Center, with a variety of shops and services, is within walking distance.

Sports Facilities and Programs
The university’s sports facilities, programs, and activities are expanding constantly to keep pace with the needs of a large student body and an increasingly fitness-conscious population. The facilities include three gymnasiums, a semi-Olympic swimming pool, three outdoor tennis courts, two indoor tennis courts, four mini-football fields, outdoor volleyball and basketball courts, aerobics studios, fitness conditioning rooms, multipurpose rooms, and a regulation-size grass football field. In addition, a multipurpose sports complex, which houses a large, state-of-the-art fitness center, basketball and volleyball courts, three squash courts, group exercise studios, and an indoor track, is located on the Main Campus. Courses offered include aerobics/step, aikido, archery, badminton, ballroom dancing, fencing, fit boxing, fitness/conditioning, group exercises (such as Pilates, yoga, and Zumba), horseback riding, judo, karate, kendo, squash, table tennis, taekwondo, tennis, and wing-tsun. Students who enjoy competitive sports may participate in intramural tournaments and play on the various Bilkent University teams.

International Center
The International Center serves as an advising and organizing unit for all international faculty members at Bilkent. The main purpose of the center is to provide ongoing assistance and guidance to international faculty by preparing guidebooks for them, informing them about services available on campus, and organizing orientation programs and social events to ease their transition to the university.

Schools and Kindergartens
Innovative preschool, primary, and secondary education programs are available to serve the needs of the university community. Bilkent Laboratory and International School (BLIS) is an English-medium school with grades from prekindergarten to 12, providing International Baccalaureate (IB), IB PYP, and IGCSE programs. The Bilkent Private Lycée is a bilingual school that follows the Turkish Ministry of Education curriculum; its primary school provides education in Turkish, with some English language classes. There is also a preschool on campus that offers Turkish-medium instruction.

Social and Cultural Activities
Bilkent University offers a lively cultural and social milieu. Student clubs organize frequent film screenings, concerts, and seminars, and young actors studying in the Department of Performing Arts give numerous performances each semester. The annual Spring Festival is a time for fun and friendship.

The university also sponsors art exhibitions and literary evenings, and is a leader in music and the performing arts in Turkey. The Bilkent Symphony Orchestra, Turkey’s first private, international, academic music ensemble, performs regularly at the Bilkent Concert Hall, and tours in Turkey and abroad.
The campus offers easy access to Ankara's cultural activities, museums, and entertainment venues. In addition, Bilkent's location in central Anatolia is convenient for travel to other cities, traditional villages, seaside and ski resorts, historic sites, and places of stunning natural beauty or great cultural interest throughout the country.

The Bilkent campuses are situated in a recently developed, safe suburban area. A shopping mall with many good stores and eateries is located within walking distance. Located a short walk off campus are diversions and amenities such as a multiplex cinema showing international films, a bowling alley, boutiques, and salons, along with Bilkent Station, a lively complex where students can try various pubs and restaurants, and occasionally enjoy live music. Also within walking distance is Sports International, a club with state-of-the-art gymnasium facilities as well as indoor and outdoor swimming pools, tennis and squash courts, and a bar and restaurants.

The Bilkent Hotel and Conference Center, at the edge of East Campus, offers all the facilities of a five-star hotel, including an outdoor swimming pool and outdoor cinema during the summer months.

Ankara, in the heart of the Anatolian region, has been the crossroads of many civilizations dating back to the Bronze Age. The city owes its existence to its location at the intersection of trade routes running north-south and east-west across the Anatolian plateau. The Bronze Age Hattians and Hittites and the Iron Age Phrygians were the earliest identifiable inhabitants. The town prospered under the Romans; its Temple of Augustus, with an important Greek and Latin inscription recording the deeds of the Emperor Augustus carved on its outer walls, still stands. The Byzantines were responsible for the fortifications that can be seen guarding the citadel. The Seljuk Turks, who took the city after 1071, built the Arslanhane Mosque, which is located just outside the citadel walls. Eventually, the Ottomans assumed control, and Ankara remained Ottoman until the end of the Empire.

In 1923, Ankara was named the capital of the Turkish Republic by the latter's founder, Mustafa Kemal Atatürk. Today, Ankara has two centers. Ulus and the adjacent citadel mark the site of the ancient and medieval town, and retain a traditional Turkish atmosphere, with old houses and shops selling traditional crafts. The Museum of Anatolian Civilizations is also located in this area. Atatürk Boulevard, Ankara's main thoroughfare, links Ulus with Kazlay, the heart of the modern city. The boulevard continues south to Çankaya, a district that is dominated by the old Presidential Palace and home to most of the embassies to Turkey.

Ankara is a modern, well-planned city, with wide boulevards, parks, restaurants, and museums, along with several universities in addition to Bilkent, ensuring the presence of a large student and professional population. The city has much to offer in terms of cultural activities, including opera, concerts, theatrical performances, lectures, and events organized by foreign embassies.

Ankara has an efficient intracity bus and underground rail system. In addition, its location in the center of Turkey makes it a convenient hub for intercity travel by means of an extensive network of private, long-distance bus companies. Many cities are also connected to Ankara by a modern rail system. Esenboğa Airport, located about 30 km northeast of the city, offers numerous regularly scheduled flights to international as well as domestic destinations.

Climate
Ankara is subject to the weather patterns of central Anatolia. While the spring and autumn seasons are generally moderate, with temperatures ranging from around 10°C (50°F) to 20°C (68°F), the winter and summer seasons can be subject to extremes.

From June to September, the weather is often hot and dry, with daytime high temperatures around 32°C (90°F). The winter season, between November and March, can be changeable, with temperatures as low as -10°C (14°F) and as high as 10°C (50°F). Snow or rain alternates with periods of clear, bright weather. It is recommended that students bring attire appropriate for all seasons.
Bilkent Symphony Orchestra
2016-2017

Season Opening Concert: From Dark to Dawn
Saturday, 8 October 2016
Avi Ostrowsky, conductor
Mojca Erdmann, soprano
W.A. Mozart | Idomeneo, KV.366 “Quando avran fine omai”
W.A. Mozart | Cosi Fan Tutte, KV.588 “Come scoglio”
W.A. Mozart | Cosi Fan Tutte Overture, KV.588
R. Strauss | “Ich wollt ein Strauslein binden”, Op. 68
R. Strauss | “Allerseelen”, Op.10
R. Strauss | “Standchen”, Op.17
D. Shostakovich | Symphony No.10 in E minor, Op.93

Happy Birthday İdil Biret
Saturday, 3 December 2016
Rengim Gökmen, conductor
İdil Biret, piano
S. Rachmaninov | Rhapsody on a Theme of Paganini, Op.43
I. Usmanbaş | Music for Orchestra – 07, World premiere
F. Liszt | Les Préludes

Journey of Dreams
Saturday, 15 October 2016
Maurice Steger, conductor & recorder
Jadran Duncumb, lute
G.P. Telemann | Klingende Geographie
C.I. Monza | Sinfonia detta, “La Tempesta di Mare”
D.N. Sarro | Concerto for Flute in D minor
A. Montanari | Concerto for Piccolo Flute in B flat major
A. Vivaldi | Concerto for Lute in D major, RV.93
G. A. Brescianello | Chaconne in A major
G. S. Sammartini | Concerto for Flute in F major

The Spirit of Festivity
Saturday, 29 October 2016
James Feddeck, conductor
Aga Mikolaj, soprano
R. Wagner | The Flying Dutchman Overture
R. Wagner | Wesendonck Lieder
P. Hindemith | Mathis der Maler: Symphony

İstanbul Concert
Sunday, 6 November 2016 | CRR Concert Hall, İstanbul
Gabor Takacs Nagy, conductor
S. Kaleli | [No.13] for Orchestra, World premiere, MIAM Composition Prize
J. Haydn | Symphony No.92 in G major “Oxford”
R. Schumann | Symphony No.4 in D minor, Op.120

In Memory of Atatürk
Saturday, 12 November 2016
Julien Masmondet, conductor
Jean Guihen Queyras, violoncello
F. Kókots | In... en thesis,
World premiere, BSO commission
H. Dutilleux | Tout un monde lointain
M. Kabalevsky | Colas Breugnon Overture, Op.24
D. Kabalevsky | Colas Breugnon Overture, Op.24
J. Brahms | Concerto for Piano No.1 in D minor, Op.15
M. Ravel | Rapsodie Espagnole
Brahms The Viking
Friday, 23 December 2016
Dorian Wilson, conductor
Vikingur Olafsson, piano
J. Brahms | Concerto for Piano No.1 in D minor, Op.15
P. Tchaikovsky | Francesca da Rimini, Op.32

New Year’s Concerts
Wednesday, Thursday, 28, 29 December 2016
Dorian Wilson, conductor
Aydar Gaynullin, bandoneon
Waltzes, Polkas

Varicolored
Saturday, 28 January 2017
Julien Masmondet, conductor
Victor Aviat, conductor
Leticia Moreno, violin
E. Satie | Gymnopédies Nos.1 & 3 Orchestrated by Debussy
M. Ravel | Rapsodie Espagnole

Spanish Fever
Friday, 10 February 2017
Victor Aviat, conductor
Leticia Moreno, violin
E. Lalo | Symphonie Espagnole, Op.21
W.A. Mozart | Symphony No.41 in C major, KV.551 “Jupiter”

Valentine’s Day Concerts: Music and Puppets
Monday, Tuesday, 13, 14 February 2017
Per Poc Puppet Company
İşin Metin, conductor
Selçuk Yöntem, narrator
S. Prokofiev | Romeo & Juliet
Boğaziçi Jazz Choir
Saturday, Sunday, 19, 20 November 2016
Masis Aram Gözbek, choirmaster

Aksak Rhymes
Saturday, 26 November 2016
Toshiyuki Shimada, conductor
Sarah Simpson, percussion
I. Stravinsky | Petrushka

Boğaziçi Jazz Choir
Saturday, Sunday, 19, 20 November 2016
Masis Aram Gözbek, choirmaster

Happy New Year for Children
Tuesday, 20 December 2016
Mozart Group & Krosny

The Legend at Bilkent
Saturday, 18 February 2017
Avi Ostrowsky, conductor
Ivo Pogorelich, piano
R. Schumann | Concerto for Piano in A minor, Op.54
J. Brahms | Symphony No.4 in E minor, Op.98
In Memory of İhsan Doğramacı  
Saturday, 25 February 2017  
Gürer Aykal, conductor  
Stanislav loudenich, piano  
Pl. Tchaikovsky | Concerto for Piano No.1 in B flat minor, Op.23  
Pl. Tchaikovsky | Symphony No.5 in E minor, Op.64  

The Classics from the Hungarians  
Saturday, 4 March 2017  
Zsolt Hamar, conductor  
Kristof Barati, violin  
J. Haydn | Symphony No.100 in G major “Military”  
W.A. Mozart | Concerto for Violin No.2 in D major, KV.211  
W.A. Mozart | Symphony No.40 in G minor, KV.550  

Paris, Mon Amour  
Saturday, 11 March 2017  
Christoph Mathias Mueller, conductor  
David Kadouch, piano  
Saygun Philharmonic Chorus  
Çigdem Aytepe, chorusmaster  
M. Ravel | Piano Concerto for left Hand in D major  
M. Ravel | Piano Concerto in G major  
C. Debussy | Nocturnes  

Spring in Vienna  
Saturday, 18 March 2017  
Mathieu Herzog, conductor  
Elena Bashkirova, piano  
L. van Beethoven | Concerto for Piano No.3 in C minor, Op.37  
J. Brahms | Symphony No.3 in F major, Op.90  

Spring Dreams  
Saturday, 25 March 2017  
BSO String Ensemble  
Konzertmeister: Irina Nikotina  
Cem Babacan, piano  
Mevlan Meid, violin  
Murat Cangal, viola  
Ece Akyol, viola  
Serdar Rasul, violoncello  
Burak Noyan, double bass  
F. Mendelssohn Piano Sextet in D major, Op.110  
Pl. Tchaikovsky Serenade in C major, Op.48  

İhsan Doğramacı Special Concert  
Monday, 3 April 2017  
Gürer Aykal, conductor  
Gülsin Onay, piano  
L. van Beethoven | Concerto for Piano No.4 in G major, Op.58  
B. Tarcan | Suite for Orchestra No.3  
A. Borodin | Symphony No.3 in A minor  

Life in Paradise  
Saturday, 8 April 2017  
Gürer Aykal, conductor  
Seda Ayazlı, soprano  
G. Mahler | Symphony No.4 in G major  

From Classic to Romantic  
Saturday, 15 April 2017  
Kazem Abdullah, conductor  
Martin Stadtfeld, piano  
L. van Beethoven | Concerto for Piano No.2 in B flat major, Op.19  
S. Rachmaninov | Symphony No.3 in A minor, Op.44  

Children’s Holiday Concert  
Friday, 21 April 2017  
Dağhan Doğu, conductor  
Çetin Özen, marimba  
Bade Daştan, violin  
Children’s Choir of Early Music Training Program  
A. Vivaldi | Concerto for Violin in E major, RV267 (Arrangement for Marimba)  
F. Mendelssohn | Concerto for Violin in E minor, Op.64  
Songs from Disney Movies  

Children’s Holiday Concert  
Saturday, 22 April 2017  
Dağhan Doğu, conductor  
Ada Dinçer, flute  
Idil Bursa, violoncello  
Children’s Choir of Early Music Training Program  
C. Stamitz | Concerto for Flute in F major, Op.29  
J. Haydn | Concerto for Violoncello No.1 in C major  
Songs from Disney Movies  

Erzurum Concert  
Thursday, 27 April 2017 | Bilkent Erzurum Concert Hall  
BSO String Ensemble  
Konzertmeister: Irina Nikotina  
Ozberk Miraç Sargılı, guitar  
A. Vivaldi | Concerto for Guitar in D major, RV93  
R. Dyens | Tango en Skai  
K. Karayev | Three Dances  
Pl. Tchaikovsky | Serenade in C major, Op.48  

The Master and the Future Star  
Saturday, 6 May 2017  
Jean-François Heisser, conductor & piano  
Eren Süalp, guitar  
C. M. von Weber | Konzertstück in F minor, Op.79  
M.C. Tedesco | Concerto for Guitar No.1 in D major  
A. Dvorak | Symphony No.8 in G major, Op.88  

Forever Young  
Saturday, 20 May 2017  
Rengim Gökmen, conductor  
Elif Ece Cansever, violin  
J. Sibelius | Concerto for Violin in D minor, Op.47  
L. Bernstein | On the Waterfront  
J. Adams | Short ride in a fast machine  

Italian Film Music Concert  
Saturday, 3 June 2017, 20.30 | Bilkent Odeon  
Ender Sakpinar, conductor  
Tulay Uyar, soprano  
Fazıl Say at Odeon  
Sunday, 18 June 2017, 20.30 | Bilkent Odeon  
Fazıl Say, piano  
L. van Beethoven | Concerto for Piano No.5 in E flat major, Op.73 “Emperor”  
F. Say | Mesopotamia Symphony, Op.38
<table>
<thead>
<tr>
<th>NAME</th>
<th>CURRENT INSTITUTION OF EMPLOYMENT</th>
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<tbody>
<tr>
<td>Didem Unal Abadzı</td>
<td>City University of New York, Department of Sociology</td>
</tr>
<tr>
<td>Enka Abuza</td>
<td>European University of Tirana, Faculty of Social Sciences and Education</td>
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<tr>
<td>Burak Acar</td>
<td>Boğaziçi University, Department of Electrical-Engineering Electronics</td>
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<tr>
<td>Handan Acaç</td>
<td>University of Chicago, Institute for Molecular Engineering</td>
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<td>Tolga Acun</td>
<td>Bülent Ecevit University, Department of Molecular Biology and Genetics</td>
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<td>Volkan Atılgın</td>
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<td>Yasemin Azcan</td>
<td>Bilkent University, Department of Interior Architecture and Environmental Design</td>
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<td>Yeşim Alıbel</td>
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<td>Sermetcan Baysal</td>
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<td>Fatih Bayram</td>
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<td>Presidency of the Republic of Turkey, Chief Adviser</td>
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<td>Istanbul Galip University, Department of Political Science and Int. Relations</td>
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<td>Sibel Altun</td>
<td>University of Waterloo, Management Science in Engineering</td>
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<td>Nilüfer A. Altınbaş</td>
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<td>Professor</td>
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<td>Senior Research Assistant</td>
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</table>
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Senior Software Engineer

Assistant Professor  
Research Associate

Assistant Professor  
Associate Professor, Chair

Assistant Professor  
CEO

Professor, Chair  
Adjunct Professor

Research Associate  
Associate Professor, Chair

Postdoctoral Associate  
Assistant Professor, Chair

Director  
Director

Associate Professor  
Embedded Software Engineer

Assistant Professor  
Lecturer

Professor  
Professor

Assistant Professor  
Assistant Professor

Assistant Professor  
Assistant Professor

Assistant Professor  
Assistant Professor

Assistant Professor  
Assistant Professor, Chair

Associate Professor  
Senior Software Engineer

Assistant Professor  
Research Associate

Research Fellow  
Associate Professor

Research Scientist  
Associate Professor, Chair

Part-Time Instructor  
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Economist

Assistant Professor  
Dean

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Assistant Professor  
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Assistant Professor  
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Lecturer  
Lecturer

Assistant Professor  
Assistant Professor

Assistant Professor  
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Assistant Professor, Chair

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Assistant Professor

Assistant Professor  
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Assistant Professor

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