



FACULTY OF ENGINEERING AND
ARCHITECTURE

BULLETIN

APRIL 2024



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What you will read in this issue

News from Faculty

Actual Topics in Engineering
and Architecture

Academic and Scientific
Activities

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TAG



23
april

National Sovereignty
and Children's Day

Ramadan

Mubarek





***NEWS FROM
THE FACULTY***



News From The Faculty

A P R I L 2 0 2 4

INDUSTRIAL ENGINEERING



Working at IGU Faculty of Engineering and Architecture, Department of Industrial Engineering **Assist. Prof. Dr. Didem Yılmaz** and **Assist. Prof. Dr. Binnur Gürül** held a meeting on possible collaborations with Elvan Food Company on April 26, 2024.

Working at IGU Faculty of Engineering and Architecture, Department of Industrial Engineering Prof. Dr. Cemalettin Kubat participated in the panel organized by the Science and Technology Association on the occasion of the 100th Anniversary of Japan-Türkiye Friendship.

Prof. Dr. Cemalettin Kubat described his views on the panel with the following words "Expanding educational activities beyond school will contribute to the better upbringing of our young people, who are the guarantee of our future. In addition, the education system will guide our children according to their talents and skills so that they enjoy what they do, thus growing up as more successful and happier people, which will primarily increase their personal success and, accordingly, contribute to the success of the nation and the country.





News From The Faculty

A P R I L 2 0 2 4

INDUSTRIAL ENGINEERING

Working at IGU Faculty of Engineering and Architecture, Department of Industrial Engineering, Assist Prof. Dr. Binnur Güröl, on April 18;

Assist. Prof. Dr. Mert Yıldırım, on April 19 and 22; Prof. Dr. Tarık Çakar, on April 24 and 25 introduced our department laboratory and university to high school students.





News From The Faculty

A P R I L 2 0 2 4

ARCHITECTURE

The scientific research titled "Aleppo City and Traditional Houses" prepared by Dr. Mahmoud Zin Alabadin, one of our faculty members from the Department of Architecture, was deemed worthy of the second place in the Architecture award in the Organization of Islamic Capitals and Cities (OICC) Awards.





News From The Faculty

A P R I L 2 0 2 4

ARCHITECTURE

ARC420 Diploma Project Jury was held on Thursday, 18.04.2024, with the participation of our Department Faculty Member Dr. Aytek Alkaya and Research Assistant Betül Gök, in addition to the Course Coordinators.



On 24.04.2024, Çatalca Anatolian High School students attended the demo lecture given by Assoc. Prof. İlke Ciritci, a faculty member of the architecture department, in our university. We wish all high school students success in their university exams.





News From The Faculty

A P R I L 2 0 2 4

ARCHITECTURE

Serkan Tapar, who works in the zoning and urban planning directorate of Esenyurt Municipality and is also a student of our school's architecture department, and Civil Engineer Mikail Eker gave a seminar on 24.04.2024 within the scope of the MIM420 diploma project course. The speakers provided important information about earthquake regulations, load-bearing systems and zoning regulations, and provided professional information by talking about mass housing design principles and the inspections carried out in the municipality's project controls.





News From The Faculty

APRIL 2024

ARCHITECTURE

The first unit of the "Design Course Training on Evaluation, Repair and Strengthening of Buildings Under the Effect of Earthquakes" organized by the Ministry of Environment, Urbanization and Climate Change has started. The content of the first unit is included in the attached list. Since the training in question will be given through the distance education portal, training records and training contents will continue through akademi.csb.gov.tr.



T.C.
ÇEVRE, ŞEHİRCİLİK VE İKLİM DEĞİŞİKLİĞİ BAKANLIĞI
Eğitim ve Yayın Dairesi Başkanlığı



Sayı : E-48493975-770-9214423
Konu : Deprem Etkisi Altındaki Binaların
Değerlendirme, Onarım ve
Güçlendirilmesine İlişkin Tasarım Kursu
Eğitim Duyurusu

03.04.2024

DAĞITIM YERLERİNE

Deprem kuşağında yer alan ülkemizde oluşabilecek doğal afetler sonrasında binalarda bakım, onarım ve güçlendirme konularında eğitim yapılması önem arz etmektedir. Bakanlığımız uzaktan eğitim portalı üzerinden çeşitli meslek kuruluşlarına, belediyelere, üniversitelere, yapı denetim şirketlerine ve kamu kurum/kuruluş personeline verilecek olan asenkron 'Deprem Etkisi Altındaki Binaların Değerlendirme, Onarım ve Güçlendirilmesine İlişkin Tasarım Kursu Eğitimi' birinci ünitesi başlamıştır. Birinci üniteye ait içerik ekli listede yer almaktadır. Söz konusu eğitim uzaktan eğitim portalı üzerinden verileceğinden eğitim kayıtları ve eğitim içerikleri akademi.csb.gov.tr üzerinden devam edecektir. Uzaktan eğitim portalında verilecek olan eğitimin mimarlık ve mühendislik fakültelerinde öğrenim gören öğrencilerinize eğitimin başladığı duyurusunun yapılması ve afişinin paylaşılması hususunda;

Bilgilerinizi ve gereğini rica ederim.

Tayfun ÇELİK
Bakan a.
Eğitim ve Yayın Dairesi Başkanı

Ders No	Ders Adı	Eğitmen	Video Sayısı	Video Süresi
A1	Mevcut Binaların Deprem Performansının Belirlenmesi	Doç. Dr. Murat Serdar KIRÇIL	3	71 Dk
A2	Deprem Yer Hareketi	Dr. Öğr. Üyesi Murat Ergenekon SELÇUK	4	115 Dk
A3	Deprem Hasarlı Binaların Onarım ve Güçlendirme Tasarımı	Prof. Dr. Haluk SUCUOĞLU	1	12 Dk
A4	Çelik Binaların Eleman ve Sistem Güçlendirilmesi	Doç. Dr. Fatih ALEMDAR	2	35 Dk
A5	Türkiye'nin Deprem Tehlikesinin Temel Değerlendirmesi	Prof. Dr. Şükrü ERSOY	4	61 Dk
A6	Binaların Harici Çerçevesiz ve Sönümleyicilerle Depreme Karşı Güçlendirilmesi	Dr. Öğr. Üyesi Fatih SÜTÇÜ	3	81 Dk
A7	Kentsel Dönüşümde Güçlendirme	Sinan TÜRKKAN	3	71 Dk
A8	Taşıyıcı Sistemlerin Davranışı ve Tasarımı	Prof. Dr. Adem DOĞANGÜN	3	90 Dk
A9	Deprem Hesabına İlişkin Genel İske ve Kurallar	Prof. Dr. Fuat ARAS	2	58 Dk
A10	Betonarme Binalarda Taşıyıcı Sistem Elamanlarının Davranışı	Prof. Dr. Zekai CELEP	4	133 Dk
A11	Bina Güçlendirmedeki Hedef Performanslar	Dr. Öğr. Üyesi Burak TOYDEMİR	2	39 Dk
A12	Onarım ve Güçlendirme Çalışmalarında ODTÜ Deneyleri	Prof. Dr. Erdem CANBAY	1	21 Dk
A13	Uygulamalar (Betonarme Bir Bina Düşey ve Deprem Yükleri Altında Değerlendirilmesi, Onarım ve Güçlendirme)	Prof. Dr. Ahmet Can ALTUNİŞİK	2	41 Dk
A14	Deprem Etkisi Altında Binaların Değerlendirilmesi ve Tasarım İçin Genel Esaslar	Doç. Dr. Onur ŞEKER	4	118 Dk
A15	Betonarme Binaların Depreme Karşı Güçlendirilmesi	Prof. Dr. Tuğrul TANKUT	3	90 Dk
A16	Betonarme Binalarda Eleman ve Sistem Güçlendirilmesi	Prof. Dr. Güray ARSLAN	2	38 Dk

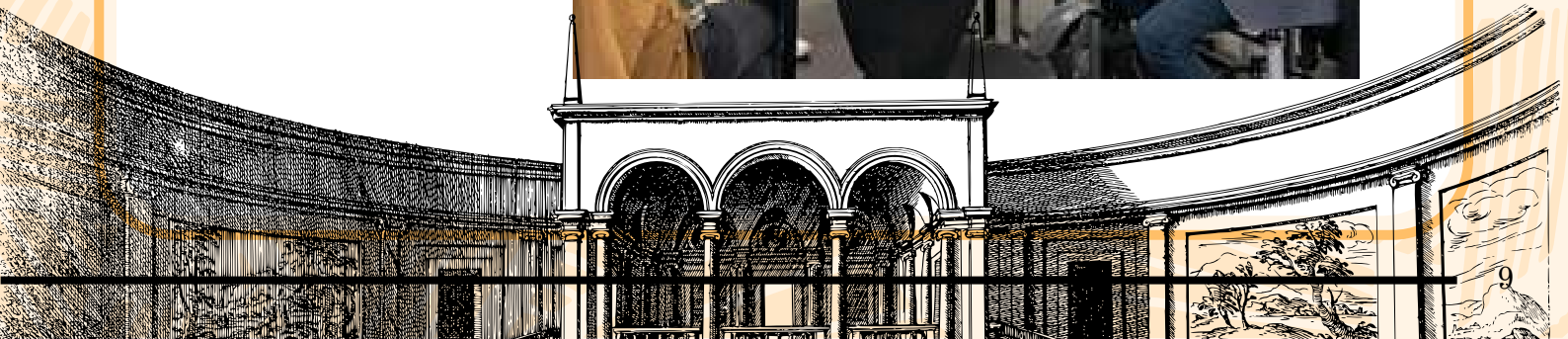


News From The Faculty

A P R I L 2 0 2 4

ARCHITECTURE

The jury was held on 19.04.2024 within the scope of MIM108 Introduction to Architectural Design II course under the supervision of Lecturer Burak Kaan Yılmazsoy. Assoc. Prof. Gül Köksal and Architect Mine Çiçek participated in the jury.





News From The Faculty

APRIL 2024

CIVIL ENGINEERING

Our Civil Engineering Club, which took its place among the stands within the scope of the Student Club Promotion Days organized between April 15-16, came together with students in J Block Mehmet Akif Ersoy Hall.



Kuzeyboru Pasta Bridge Competition will be organized by our Civil Engineering Club on May 4, 2024. Students from different universities will also be able to participate in the competition where prizes will be awarded to the winning teams. The poster of the competition and information about the application requirements have been published on our web page.



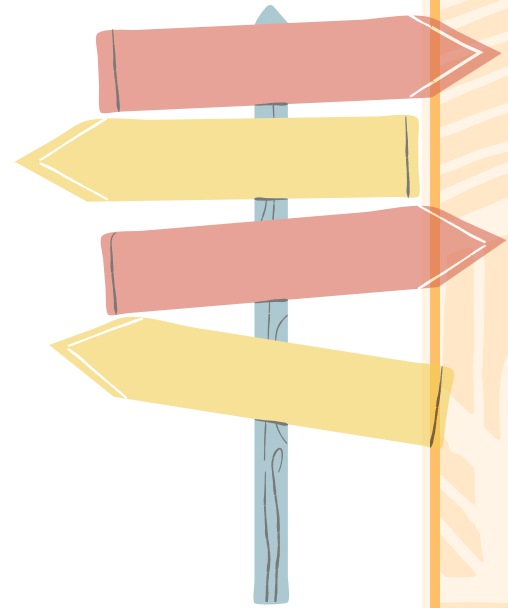


News From The Faculty

A P R I L 2 0 2 4

CIVIL ENGINEERING

On April 26, 2024, our Civil Engineering Club organized a technical trip to Akçansa Büyükçekmece Cement Plant. Accompanied by Assoc. Prof. Dr. Anil NİŞ, one of our department faculty members, and Assist. Prof. Dr. Hamit ÖZTÜRK, Vice Head of our department, our club members received information about the production processes from the authorities at Akçansa Büyükçekmece facility and made a field visit.





News From The Faculty

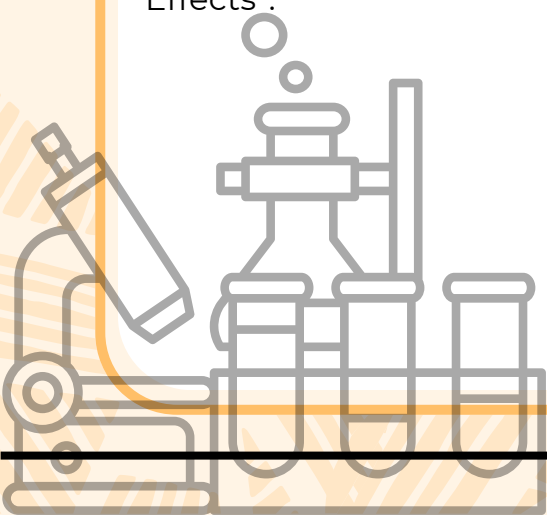
A P R I L 2 0 2 4

CIVIL ENGINEERING



On 22.04.2024, an academic delegation from Universiti Teknologi Malaysia visited our department. The academic delegation held meetings with our department faculty members and exchanged ideas on possible future collaborations.

Concrete samples were prepared by our Vice Head of Department Assist. Prof. Dr. Hamit ÖZTÜRK and our students within the scope of the subject "Behavior of EGC Samples with Various Nano Content under Different Strength and Durability Effects".





News From The Faculty

A P R I L 2 0 2 4

CIVIL ENGINEERING

During the month of April, students from different high schools were given introductory visits to the department by our faculty members. Our faculty members gave information about Civil Engineering and their fields of study to the students in our department laboratories. In addition, they made presentations about laboratory equipment and experiments.





News From The Faculty

A P R I L 2 0 2 4

COMPUTER ENGINEERING

Istanbul Gelisim University Computer Engineering Department participated in Huawei ICT Competition 2023 -2024 Europe Teachers Summit.

The event, organized by Huawei ICT Academy at Elite World Grand Hotel Küçükalyalı on April 25, 2024, was attended by Head of Department Prof. Dr. Abdulsamet HAŞILOĞLU, Vice Head of Department Assist Prof. Mustafa ŞENOL, Assist Prof. Metin DUMANLI, Assist Prof. Zeinab HASSANZADE, Research Assistants Ahmet Nail Taştan, Erdi ACAR, M. Mustafa YURDAKUL and M. Ali BARIŞKAN attended.

Huawei ICT Academy was established by Huawei to support technology education worldwide, providing students, teachers, and industry professionals with a variety of training and certification opportunities in information technology and communications.

Huawei ICT Academy often partners with universities, colleges, and other educational institutions to provide students with the opportunity to gain the most up-to-date skills in the industry. Courses offered under this program include network technologies, cloud computing, artificial intelligence, data analytics, and other information technology fields.





News From The Faculty

APRIL 2024

ELECTRICAL AND ELECTRONICS ENGINEERING

Career and Job Opportunities in Power Engineering and Transformer Maintenance Engineering

Sector Interviews-1 event was held on 25.04.2024 at 14:00 in Hall 701 of the Tower with the participation of Ramazan Aksoy from Aksoy Transformer and Engineering Company. All our students who are interested in the sector and want to get information are invited

 İSTANBUL GELİŞİM ÜNİVERSİTESİ
 AKSOY TRAFÖ MÜHENDİSLİK

ELEKTRİK-ELEKTRONİK MÜHENDİSLİĞİ
SEKTÖR SÖYLEŞİLERİ-I
 Güç Mühendisliği ve Transformör Bakım Mühendisliğinde Kariyer ve İş İmkanları

 25.04.2024
 14:00

 İGÜ KULE 701
 NOLU SALON


RAMAZAN AKSOY





News From The Faculty

A P R I L 2 0 2 4

AERONAUTICAL ENGINEERING

ANKA Aviation Club Event at Istanbul Gelişim University Draws Great Interest

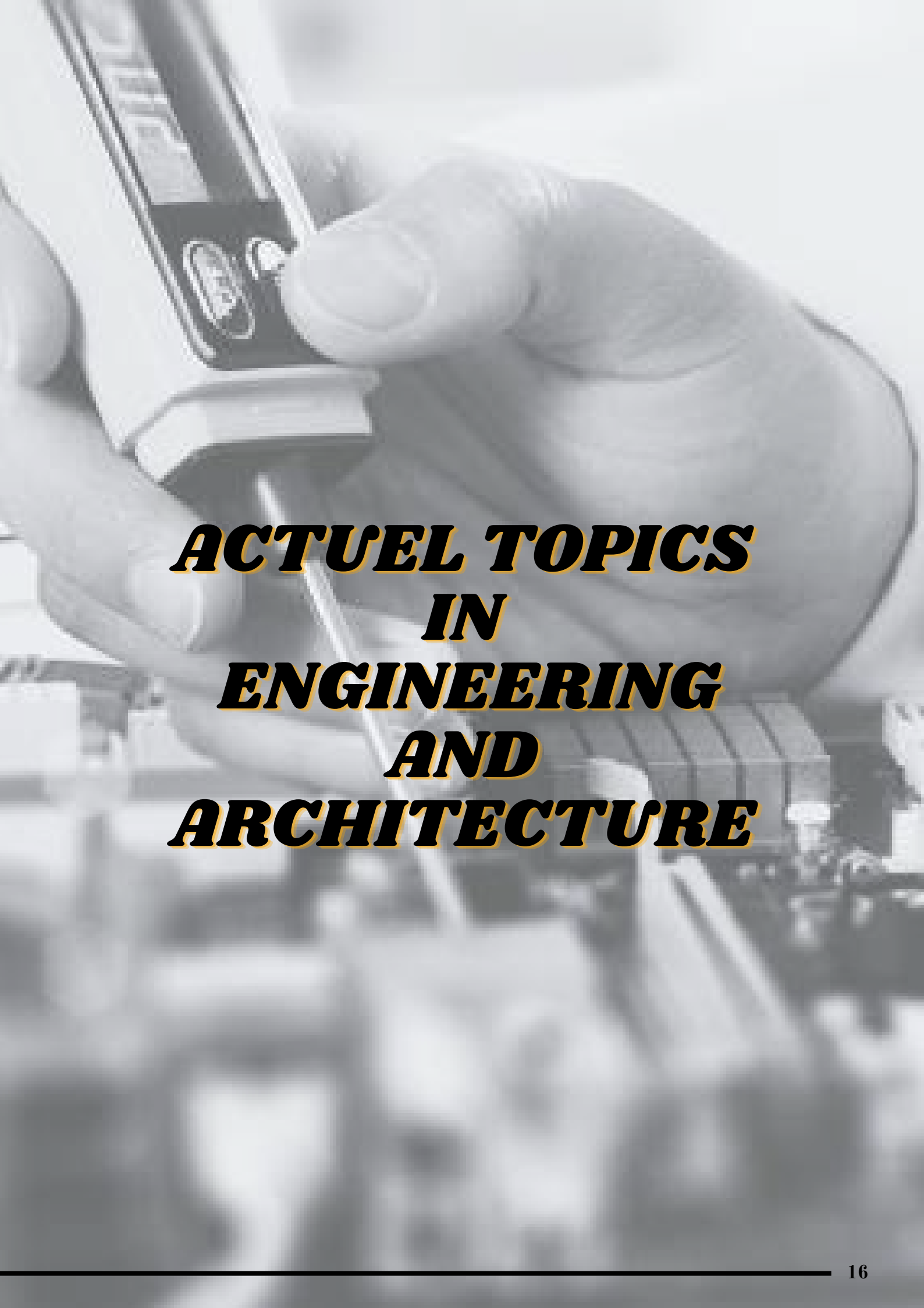
The Student Clubs Introduction event held at Istanbul Gelişim University (IGU) campus on April 15-16 saw significant interest in the booth of ANKA Aviation Club, affiliated with the Aeronautical Engineering Department. Led by Researcher Cem Avci, the club introduced participants to the exciting world of aviation through flight simulator experiences and a knowledge competition.

The booth of ANKA Aviation Club provided students with the opportunity to experience realistic flight simulations. Particularly, students interested in aircraft engineering and aviation gained flight experience in the simulator and acquired knowledge about the basic principles of flight. Additionally, the knowledge competition event fostered an enthusiastic competitive atmosphere among students and covered a wide range of information related to aviation.

Speaking about the event, Assistant Professor Cem Avci, the advisor of ANKA Aviation Club, said, "We organize such events regularly to keep our students' interest alive in the field of aviation and to prepare them for this exciting sector. The interest we saw here today truly pleased us, and we will continue to work to encourage our students to further advance in the field of aviation."

The event by ANKA Aviation Club provided Istanbul Gelişim University students with the opportunity to gain practical experiences in the field of aviation while also bringing together young individuals interested in the sector to support the sharing of knowledge and experiences.





***ACTUEL TOPICS
IN
ENGINEERING
AND
ARCHITECTURE***

THE ROLE OF STOCHASTIC MODELS IN THE FIELD OF INDUSTRIAL ENGINEERING

Prepared by: Res. Asisst. Duygu TÜYLÜ



Industrial engineering is a discipline that deals with the design, improvement and management of complex systems. These systems are often full of uncertainty and variability. Therefore, industrial engineers frequently use stochastic models to model and resolve these uncertainties.

Fundamentals of Stochastic Models: Stochastic models are based on mathematical modeling of random variables and uncertainties. These models use probability theory and statistical methods to predict the future behavior of the system. In industrial engineering, stochastic models are used in many areas such as optimizing production processes, inventory management, supply chain planning and risk analysis.

Optimization of Production Processes: Industrial production processes are often subject to uncertainties and variables. Factors such as demand fluctuations, worker productivity, and equipment failures affect process performance. Stochastic models are used to optimize production processes by taking these uncertainties into account.

For example, Monte Carlo simulations are widely used for capacity planning of manufacturing facilities and determining inventory levels.

Risk Analysis and Decision Making: Industrial engineers have to manage the uncertainties encountered in decision-making processes. Stochastic models are used to analyze risk and support decision-making processes. Stochastic simulations and probability models can be used to evaluate possible scenarios and identify risky situations.

Stochastic models are a powerful tool for dealing with uncertainties in the field of industrial engineering. These models can be used in many areas such as optimizing production processes, supply chain management, risk analysis and decision making. Using stochastic models, industrial engineers can develop effective strategies to understand and improve complex systems.



SOFTWARE 2.0: THE PROGRAMMING PARDIGM OF THE FUTURE Prepared by: Res. Asisst. Sevcan BULUT



In recent years, the term "Software 2.0" has been gaining increasing popularity in the world of software development. This new approach redefines how software is shaped, particularly through the use of artificial intelligence and machine learning algorithms, going beyond traditional programming techniques. Coined by Andrej Karpathy, this term highlights the growing integration of deep learning models into software development processes.

Software 2.0 refers to the increasing use of deep learning models in software development processes. This paradigm shift represents an approach where developers provide large datasets to models to learn desired behaviors rather than instructing them explicitly on how to execute programs. This enables software to be developed more flexibly and effectively, particularly in areas such as image processing, natural language processing, and robotics.

Advantages of Software 2.0:

1. Efficiency: Software 2.0 optimizes the use of data to solve problems, making the development process more efficient.
2. Adaptability: Models can quickly adapt to changing conditions and requirements.
3. Automation: Some tasks that would traditionally require programming can be automated by machine learning models.

Current Challenges:

Despite its excitement, Software 2.0 paradigms still face some significant challenges:

- Data Dependency: Effective models require large and well-processed datasets.
- Interpretability: Deep learning models may be harder to interpret compared to traditional software.
- Security and Privacy: Since learning models require data as input, data privacy and security are significant concerns.

Future Outlook:

Software 2.0 represents an ongoing evolution in computer science and software engineering. In the coming years, this new paradigm will continue to shape software development processes, especially as artificial intelligence technologies and algorithms further evolve and mature. However, effective integration of this new approach will require trained workforce, better data management policies, and advanced tools.

Conclusion:

While Software 2.0 presents developers and companies with the potential to offer innovative solutions that provide a competitive advantage, embracing these new technologies requires continuous adaptation and learning to cope with the challenges it brings. The future promises more innovations in how data and algorithms shape software.



3D PRINTING WITH CLAY

Prepared by: Assist. Prof. Dr. Safar POURABBAS

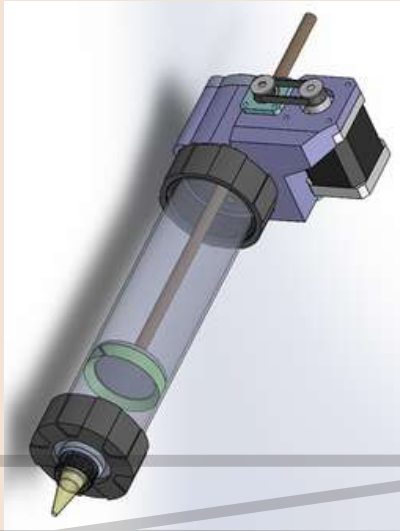


Figure 1



Figure 2

The most common 3D printers are based on the FDM method. In the method, a plastic filament is fed through an extrusion motor into a heated nozzle. As a result, the plastic material is melted and the desired shapes and forms are printed layer by layer with the programmed movements of the 3D printer robotic system. In clay printing, the printing procedure is very similar to the FDM method. This means that the clay is pushed through a nozzle and the clay parts are printed following the movements of the robotic system. Obviously there are some differences. For example, the clay does not need to be heated. Moreover, the clay is no longer in filament form; instead, it has to be prepared and stored in a hopper until it is pushed by the extrusion stepping motor. Clearly, the clay extrusion mechanism is completely different compared to filament extrusion in the FDM printing method. With all this, an FDM-based 3D printer can be modified to be used as a clay 3D printer. This article discusses this topic.

The most important element of 3D printing with clay is the design and manufacture of an efficient clay extrusion system. A different solution can be considered for this purpose. Here is one developed in our laboratory at Istanbul Gelisim University Mechatronics Engineering department.

Figure 1 shows the Solidworks design for the extrusion system. In this system, the clay inside the chamber is extruded by means of a threaded rod. The gear rod itself is driven by a worm gearbox. The design of the worm gearbox is also shown. In this design, the extruding stepper motor rotates the worm. This is done through a geared pulley and strap motion mechanism. The worm rotates the gear integrated with a trapezoidal bolt and lead screw system. As a result, the rotation of the gear moves the central lead screw forward, which ejects the clay out of the nozzle.

The fabricated direct extruder is shown in Figure 2. The clay chamber was made of an Aluminum pipe that could be easily separated from the gearbox and also from the nozzle and throat part underneath. The inner diameter of the pipe was 51 mm. All this makes cleaning and maintenance much easier and user-friendly. The nozzle itself can be easily removed and cleaned as it is connected by a threaded fitting.



3D PRINTING WITH CLAY

Prepared by: Assist. Prof. Dr. Safar POURABBAS

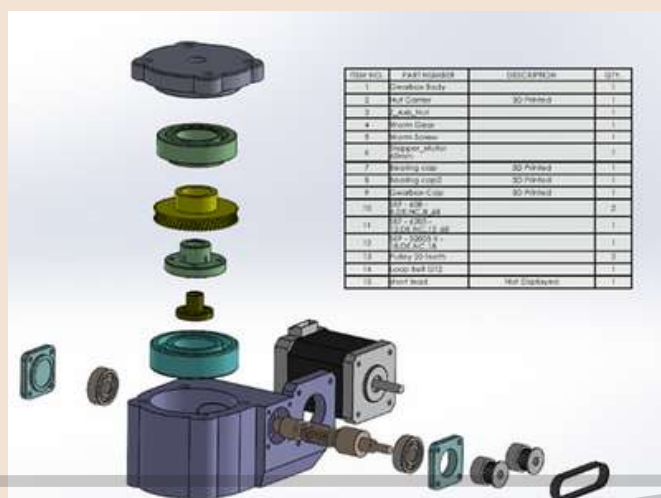


Figure 3

Results

In clay printing, the water content of the clay plays an important role on the extrusion motor power and size. In this project it was planned to use a Nema17 stepper motor equipped with a worm gearbox mechanism. It was important to find out how thick a clay could be extruded through a 3 mm diameter nozzle.

A sample of commercially available porcelain clay was purchased. Clay is used to make pottery. The first use of the clay made it clear that it was too thick (low water content) to be extruded through a nozzle of a few millimeters. Clearly it has recently proved impossible to extract it through a 3 mm diameter nozzle. As a further attempt, a clay sample was dried to find the water content. It was found that pottery clays on the market contain almost three parts soil and one part water. In other words, 25% of the clay obtained consists of water.

As a result, a series of experimental trials were conducted to find out how thick a clay can be effectively extruded through the clay extruder designed in this study. It was found that the clay should have a minimum water content of 29% and that a clay with 30% water content can be easily extruded through a 3 mm nozzle.

To achieve a perfect clay print, it is important to make sure that there are no air bubbles in the clay. However, when the clay chamber is filled by manual procedures, there is a very high chance that air is trapped between pushing the clay into the clay chamber. To avoid this problem, a simple but remarkably successful procedure has been adopted.

All the steps followed to prepare bubble-free clay until it is loaded into the extruder chamber are as follows:

- The required amount of water is added to the dry soil and mixed until a homogeneous clay is obtained,
- Two plastic PVC tubes are used for clay loading. Meanwhile, a thin polyethylene plastic film is placed on the inner surface of one of the tubes in the form of a sleeve,
- The clay is loaded into the tube without the plastic sleeve with a wooden stick. At this stage, a significant amount of air will be trapped in the loaded clay.
- The loaded tube is placed on top of the unloaded tube by means of an adapter piece,
- And the clay is pushed by a piston from the upper tube to the lower tube. At this stage most of the air trapped in the clay will be expelled, resulting in an almost airless clay.
- The clay is taken out together with its thin plastic sleeve and fed into the extruder chamber.
- Finally, the nozzle head, which is fixed to the extruder chamber opening.

Two important achievements are made with this process. First, an almost bubble-free clay is obtained and second, the clay does not contaminate the inner wall of the extruder chamber. Indeed, these steps create a clay sausage.

3D printing with clay starts with opening the STL model of the object by the 3D printing software. In this study a single clay wall was considered, so a Gcode file containing the model's peripheral was created. This file was then copied to an SD card and executed by the 3D printer controller. Figure 3 shows some of the recently developed extruder-printed models. The water content of the clay was 30%.

Finally, if you are using Marlin as your 3D printing firmware, you need to change the relevant parameters in the configuration file. This is not covered in this article.

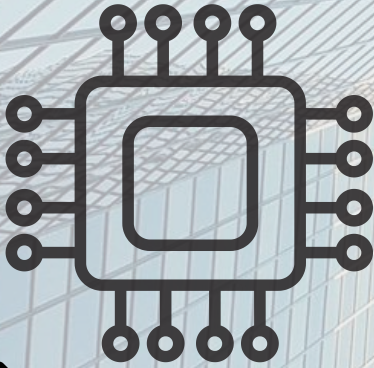




***ACADEMIC AND
SCIENTIFIC
ACTIVITIES***

Computer Engineering

Zeinab HASSANZADEH was appointed to the Computer Engineering Assist Prof.Staff. We wish her success in her academic life.

ELECTRICAL AND ELECTRONICS ENGINEERING

The full text paper titled "Investigation of temperature, humidity and force-sensitive sensors for future smart bed pads" by Kubilay ATAŞ, Research Assistant at the Department of Electrical and Electronics Engineering, was published at the "The 7th International Conference on Frontiers of Sensors Technologies (ICFST 2023)" conference held in Xi'an, China.

CIVIL ENGINEERING

The research paper titled "Static Analysis of Functionally Graded Porous Beam-Column Frames by the Complementary Functions Method" prepared by our Civil Engineering Head of Department Assist. Prof. Dr. Ahmad Reshad NOORI was published in the Structures journal that has an impact factor of Q1 by SCI rank.

İSTANBUL GELİŞİM UNIVERSITY GRADUATE TRACKING SYSTEM

Graduate Tracking System (METSİS) was opened to determine and follow the current status of our graduates, such as employment and post-graduation education, and to create statistical data. Istanbul Gelişim University has activated METSİS in order to strengthen its relations with graduates and contribute to the employment of graduates. Our graduates can become members of METSİS free of charge. (metsis.gelisim.edu.tr)

Our graduates who are METSİS members can follow our job postings by updating their personal profiles.

How do I become a member of METSİS?

Log in to metsis.gelisim.edu.tr platform.

You can follow the postings in the open positions box.

To apply for the postings, you can create an account from the New Candidate box.

After creating an account, you can view job postings and apply for suitable positions from the postings tab at the top.

GRADUATE SATISFACTION SURVEY

Dear IGU Alumni,

Within the scope of the Strategic Plan, a "Graduate Evaluation Survey" has been developed in order to obtain your opinions as an important stakeholder and to determine the program and course outcomes in line with these opinions.

If you want to see your university in higher rankings, we kindly ask you to fill out the survey and thank you for your participation.

Graduate Evaluation Survey:
<https://metsis.gelisim.edu.tr/>

