FACULTY OF ENGINEERING AND ARCHITECTURE

BULLETIN

● JUNE 2025 ●

WHAT YOU WILL READ IN THIS ISSUE:

News from Faculty

Actuel Topics in Engineering and Architecture

Academic and Scientific Activities

FACULTY OF ENGINEERING AND ARCHITECTURE

NEWS FROM THE FACULTY

MONTHLY BULLETIN

JUNE
2025

NEWS FROM THE FACULTY

● ELECTRICAL AND ELECTRONICS ENGINEERING ●

ACADEMIC ACHIEVEMENT CERTIFICATE FOR IGU ELECTRICAL AND ELECTRONICS ENGINEERING FACULTY MEMBERS PROF. DR. BAYRAM ÜNAL, DR. ERCAN AYKUT, AND DR. HALIT YAHYA

Our esteemed faculty members in the department, Prof.Bayram ÜNAL, Assist Prof. Dr. Ercan AYKUT, and Assist Prof. Dr. Halit YAHYA, continue to be a source of pride with their academic achievements and scientific contributions. Recently, they have once again made us proud by being recognized with prestigious awards that honor their hard work and dedication.On behalf of our department, we sincerely congratulate our professors for their outstanding efforts, devoted work, and valuable contributions to the scientific community. These awards mark important milestones that enhance both their individual careers and the academic reputation of our department.We extend our gratitude to Prof. Bayram ÜNAL, Assist Prof. Dr. Ercan AYKUT, and Assist Prof. Dr. Halit YAHYA, whose success continues to inspire us all. We wish them continued success and look forward to seeing them achieve many more accolades in the future

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ACADEMIC ACHIEVEMENT CERTIFICATE TO IGU INDUSTRIAL ENGINEERING FACULTY MEMBER ASST. PROF. NURDAN TÜYSÜZ AND ASST. PROF. MERT YILDIRIM

As a result of the 2024 academic performance evaluations of Istanbul Gelişim University, Asst. Prof. Nurdan Tüysüz and Asst. Prof. Mert Yıldırım, academic staff members of the Department of Industrial Engineering of the Faculty of Engineering and Architecture, were awarded the “Certificate of Achievement” for their academic work.

According to Istanbul Gelişim University’s academic success ranking system, this certificate is given based on the research, publication, project and academic contributions of academic staff. The scientific activities carried out throughout 2024 were appreciated by the university and Asst. Prof. Nurdan Tüysüz ranked 43rd and Asst. Prof. Mert Yıldırım ranked 42rd, thus achieving significant success.

We congratulate our academic staff and wish them continued success.

IGU INDUSTRIAL ENGINEERING DEPARTMENT SUCCESSFULLY COMPLETED 2024-2025 GRADUATION PROJECTS

Istanbul Gelişim University, Faculty of Engineering and Architecture, Department of Industrial Engineering successfully completed the 2024-2025 academic year Graduation Design Project presentations on May 29-30, 2025. In the jury sessions held in the Ergonomics Laboratory, students demonstrated their four-year academic knowledge with technical and practical studies.

In this year's projects, original solutions were developed in areas such as production planning, quality control, sustainability, ERP integration, and artificial intelligence-supported systems. Students demonstrated not only their theoretical knowledge but also their competencies with field studies, mathematical modeling, and simulation-supported applications.

The quality of the process was increased with the updated project guide and academic consultancy support. The Department Head congratulated all students who successfully completed their projects and wished them success in their careers after graduation.

ACADEMIC PERFORMANCE AWARDS PRESENTED AT ISTANBUL GELISIM UNIVERSITY

The traditional Academic Performance Award Ceremony, organized annually by Istanbul Gelisim University, was held once again this year to honor faculty members across departments for their outstanding contributions in academic research and productivity. The awards recognize achievements based on various criteria, including the number of scientific publications, citation counts, involvement in research projects, and overall academic impact.

At the ceremony, the Department of Civil Engineering stood out with its remarkable academic achievements. Asst. Prof. Dr. Ahmad Reshad NOORI, Chair of the Department, was honored with an award in recognition of his outstanding academic contributions. In addition, faculty members Prof. Dr. Nuri KURUOĞLU, Prof. Dr. Mustafa KARAŞAHİN, Assoc. Prof. Dr. Anıl NİŞ, Assoc. Prof. Dr. Metin MEHMETOĞLU, and Asst. Prof. Dr. Aylin Ece KAYABEKİR were also among the recipients of this year's academic performance awards.

In remarks made by the university administration, it was emphasized that such awards play a significant role in enhancing the institution's research vision and in motivating continued scholarly excellence.

As the Department of Civil Engineering, we extend our sincere congratulations to our faculty members for this well-deserved recognition and wish them continued success in their academic endeavors on both national and international platforms.

RESEARCH ASSISTANT BILGE SULTAN DEMİRTAŞ'S PAPER PRESENTED AT THE 10TH NATIONAL GEOSYNTHETICS CONFERENCE

The paper titled "Effects of EPS Geofoam Cushion Density on the Seismic Behavior of Retaining Walls", prepared by Research Assistant Bilge Sultan DEMİRTAŞ from the Department of Civil Engineering in collaboration with her thesis advisor, was presented at the 10th National Geosynthetics Conference (G10), hosted by Boğaziçi University on May 29–30, 2025.

The study investigates the effects of different densities of EPS geofoam cushions, which are used to enhance the seismic safety of retaining walls in earthquake-prone areas. With its low unit weight and high vibration damping capacity, EPS geofoam stands out as a promising alternative to traditional backfill materials, offering improved seismic performance for retaining walls.

In this context, shake table tests were conducted on a 1:25 scale model of a retaining wall to experimentally examine the impact of EPS geofoam cushion density. The results showed that increasing the cushion density significantly improved the wall's seismic performance.

We congratulate Research Assistant Bilge Sultan DEMİRTAŞ on this valuable scientific contribution and wish her continued success in her academic career.

● CIVIL ENGINEERING ●

RES. ASST. BILGE SULTAN DEMİRTAŞ PRESENTED A PAPER AT COMPDYN 2025

Bilge Sultan DEMİRTAŞ, a Research Assistant in the Department of Civil Engineering at Istanbul Gelisim University, presented a scientific paper at "COMPDYN 2025 – 10th ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering," held between June 15–18, 2025.

The study, titled "Effectiveness of Geogrid Reinforced Foundation on Seismic Performance of Retaining Wall: Numerical Study", was conducted in collaboration with Prof. Dr. Ayşe EDİNÇLİLER from Boğaziçi University. The paper evaluates, through numerical analysis, the seismic performance of retaining walls with geogrid-reinforced foundations under earthquake loading conditions.

This research highlights the effectiveness of geogrid applications in enhancing soil–structure interaction and contributes significantly to the improvement of seismic resilience in engineering design.

We congratulate Res. Asst. Bilge Sultan DEMİRTAŞ on this valuable scientific contribution and wish her continued success in her academic career.

NEWS FROM THE FACULTY

● CIVIL ENGINEERING ●

Under the supervision of Asst. Prof. Dr. Ahmad Reshad NOORI, the Chair of the Department of Civil Engineering at Istanbul Gelisim University, PhD student Ahmed M. W. ALHASAN has successfully presented his 2nd Thesis Monitoring Committee (TMC) report.

This report, which marks a significant milestone in the doctoral journey, was reviewed and approved by the committee, indicating the successful continuation of the research process. The department commends Ahmed M. W. ALHASAN for his dedicated and systematic academic progress, which reflects the quality and rigor of his ongoing research.

We sincerely congratulate Ahmed M. W. ALHASAN for this achievement and wish him continued success in his doctoral studies.

Under the supervision of Asst. Prof. Dr. Ahmad Reshad NOORI, the Chair of the Department of Civil Engineering, Ahmed AL-HUTHAIFI has successfully defended his master's thesis titled "Bending Analysis of Hollow and Solid Sandwich FDM Rectangular Plates" and has earned the right to graduate.

The thesis focused on the comparative bending behavior of hollow and solid sandwich rectangular plates made of Functionally Graded Materials (FGMs), which have gained significant importance in modern engineering applications. The study provided a comprehensive evaluation of the structural performance of these elements in terms of weight reduction and bending strength, contributing valuable insights to the literature.

The thesis defense was evaluated by jury members Asst. Prof. Dr. Arman ATASOY and Asst. Prof. Dr. Hamit ÖZTÜRK, who commended the scientific quality and depth of the study.

NEWS FROM THE FACULTY

● CIVIL ENGINEERING ●

Our PhD student in the Department of Civil Engineering, Alaa ALSHARAFA, successfully delivered her First Thesis Monitoring Committee (TMC) presentation under the supervision of her advisor and our Department Chair, Asst. Prof. Dr. Ahmad Reshad NOORI, as part of her ongoing doctoral research.

This presentation marks a significant milestone in her doctoral education, aimed at evaluating the student's academic competence in terms of research planning, methodological approach, and literature proficiency. Alaa ALSHARAFA's successful performance demonstrates a strong and determined start to her thesis process and presents a promising outlook for the upcoming stages of her research.

Her advisor, Asst. Prof. Dr. Ahmad Reshad NOORI, congratulated her on this achievement and expressed his confidence that her disciplined and dedicated academic efforts will continue to thrive in the future.

Ahmad ALBASHA, a graduate student in the Department of Civil Engineering at Istanbul Gelisim University, has successfully defended his master's thesis titled "The Effect of Ground Motion and Number of Stories on the Seismic Behavior of Multi-Story Reinforced Concrete Structures." With this achievement, he has completed an important milestone in his academic journey.

His research focused on a critical subject in earthquake engineering, examining how variations in ground motion and building height (story number) influence the structural response of reinforced concrete buildings during seismic events. The findings of the thesis aim to contribute to safer and more resilient design practices in structural engineering.

The thesis was supervised by the Chair of the Civil Engineering Department, Asst. Prof. Dr. Ahmad Reshad NOORI, and was met with appreciation by the thesis jury. Committee members Asst. Prof. Dr. Hamit ÖZTÜRK and Asst. Prof. Dr. Timuçin Alp ASLAN also provided valuable support and expertise throughout the evaluation process.

NEWS FROM THE FACULTY

● CIVIL ENGINEERING ●

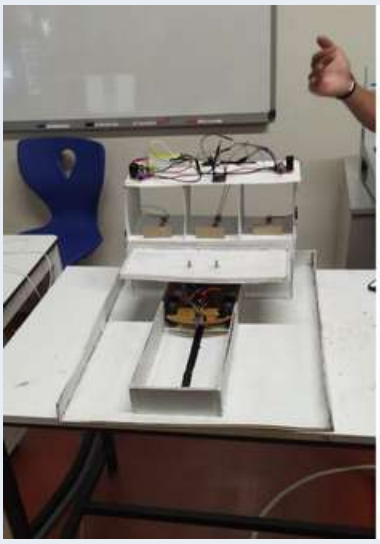
Mehmet Sena KAŞKA, a PhD student in the Department of Civil Engineering at Istanbul Gelisim University, has successfully completed his doctoral studies under the supervision of Assoc. Prof. Dr. Anıl NİŞ.

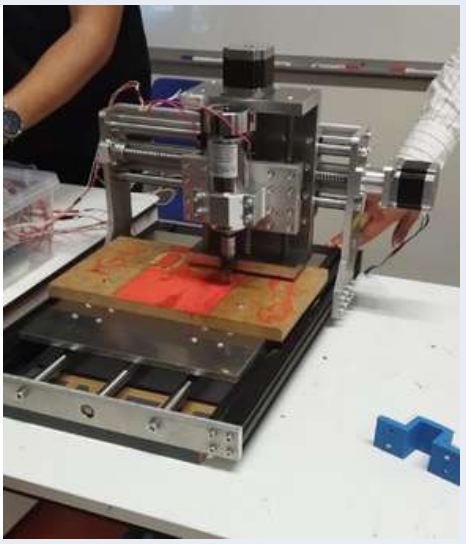
His graduation marks the culmination of a dedicated academic journey enriched with rigorous research and scholarly contributions. Throughout his postgraduate education, Mehmet Sena KAŞKA demonstrated strong academic performance and contributed meaningfully to the field of civil engineering.

Assoc. Prof. Dr. Anıl NİŞ expressed his satisfaction with his student's achievement, stating his belief that KAŞKA will continue to contribute to the scientific community through future research endeavors.

We sincerely congratulate Mehmet Sena KAŞKA on this academic milestone and wish him continued success in his professional and academic career

CREATIVE GRADUATION PROJECTS BY MECHATRONICS ENGINEERING STUDENTS





On 19 June 2025, the graduation project presentation by the 4th year students of Mechatronics Engineering attracted great interest. The students presented the projects they worked on meticulously throughout the year. A wide range of projects from robotic arm to CNC machines, from smart home systems to innovative smart shower system, from laser engraving machine to Precision Cutting machine were exhibited. These projects, which attracted attention with both their technical competences and creative approaches, demonstrated that the students were able to successfully apply their theoretical knowledge in practice, while impressively demonstrating the interdisciplinary structure of mechatronics engineering.

ASST. PROF. DR. OLUWAGBEMIGA PAUL AGBOOLA HONOURED WITH CERTIFICATE OF ACHIEVEMENT

Asst. Prof. Dr. Oluwagbemiga Paul AGBOOLA has been recognised in the 2024 Istanbul Gelisim University General Academic Ranking and awarded a prestigious Certificate of Achievement. This accolade reflects his exceptional academic performance and noteworthy contributions to the global scientific community, as evaluated by the University's Academic Performance Evaluation System (APES). The award was formally presented at a special ceremony held on Friday, June 20, 2025, at the Mehmet Akif Ersoy Conference Hall. The event brought together distinguished faculty and staff to celebrate academic excellence across disciplines

NEWS FROM THE FACULTY

● ARCHITECTURE ●

Arc420 Diploma Project course advisors consist of Department of Architecture Faculty Members Prof. Harun Batırbaygil (PhD), Assoc. Prof. Türkan Uzun (PhD), Assist. Prof. Semih G. Yıldırım (PhD), Assist. Prof. Önder Çelik (PhD). On May 26, 2025, Assist. Prof. Semih G. Yıldırım (PhD) and Assist. Prof. Önder Çelik (PhD) groups organized a joint final jury.

The final jury of the "MIM252 Architectural Design 2" course was held on May 28, 2025 at Rumeli University Department of Architecture. Upon the invitation of Assoc. Prof. Dr. Gül Yücel (PhD), Assist. Prof. Semih G. Yıldırım (PhD) participated in the final jury as a jury member. He had previously participated in the mid-term jury of the aforementioned project course on April 9, 2025.

NEWS FROM THE FACULTY

● ARCHITECTURE ●

PARTICIPATION AS A JURY MEMBER IN A M.SC. THESIS DEFENSE AT THE DEPARTMENT OF ARCHITECTURE, ISTANBUL KÜLTÜR UNIVERSITY

Burak Demir, an alumni of the Department of Architecture at Istanbul Gelişim University, pursued his master's degree in the Department of Architecture at Istanbul Kültür University. His master's thesis defense was held on June 18, 2025. Upon the invitation of the thesis advisor, Prof. Neslihan Dostoğlu (PhD), Assist. Prof. Semih G. Yıldırım (PhD) served as a jury member during the defense. Having successfully defended his thesis, our graduate Burak Demir has completed his master's studies.

EXTERNAL STAKEHOLDER MEETING – SW ARCHITECTURE – IGU DEPARTMENT OF ARCHITECTURE

A meeting was held on 26.06.2025 with Architect Ömer Yeşildal, founder of SW Architecture, an external stakeholder of the Department of Architecture. During the meeting, collaborations were established about job opportunities and internship opportunities for our graduates

FACULTY OF ENGINEERING AND ARCHITECTURE

ACTUEL TOPICS IN ENGINEERING AND ARCHITECTURE

MONTHLY BULLETIN

JUNE 2025

ACTUEL TOPICS IN ENGINEERING AND ARCHITECTURE

● COMPUTER ENGINEERING ●

THE FUTURE OF PROCESSING: ENERGY-SMART, LIGHTNING-FAST! – RES.ASST.HASAN YILDIRIM

On June 28, 2025, a new generation processor architecture centered on artificial intelligence (AI) was introduced at the International Computer Engineering Conference held in Singapore. Developed by a domestic technology company, this chip offers groundbreaking advancements in both energy efficiency and computational speed. The innovation marks a significant milestone in the fields of computer engineering and AI, aiming in particular to enable faster and more cost-effective execution of deep learning models.

The newly introduced chip is based on a neuromorphic architecture inspired by the neural networks of the human brain. Compared to traditional processors, it consumes 40% less energy while processing complex AI models 25% faster. Its most striking feature is a dynamic memory management system with self-learning capabilities. This system adapts in real-time to data streams, delivering high performance especially in applications such as autonomous vehicles, medical diagnostic systems, and industrial automation.The project lead, a computer engineer, emphasized: “This chip will accelerate the widespread adoption of artificial intelligence. Energy efficiency and high performance are critical for sustainable technology.” The chip was developed using fully open-source software tools and domestically designed hardware components. Pilot tests demonstrated that the chip outperformed existing solutions, particularly in big data analytics and natural language processing (NLP) applications. According to test results, it achieved a 20% higher accuracy rate on models running on popular AI frameworks such as TensorFlow and PyTorch.Another significant aspect of the project is its environmentally friendly production approach. Recyclable materials were used in manufacturing, reducing the carbon footprint by 30% compared to conventional chip production processes. Additionally, mentorship programs were launched within the scope of the project to encourage young engineers to specialize in AI and hardware design.Mass production of the chip is expected to begin in mid-2026. Experts anticipate that this technology could offer a competitive edge in the global AI market and attract strong interest, particularly in the Asia-Pacific region. Several major technology companies from Europe have already initiated talks regarding licensing and collaborative development projects. This breakthrough stands as a compelling example of how regional innovation in computer engineering and AI can have a global impact.

REVOLUTIONARY VEHICLE LOCK SECURITY SOLUTION AGAINST RF ATTACKS AT MEKON 2025 – RES.ASST.HASAN YILDIRIM

Dr. Cansu Noberi, Assistant Professor, and Research Assistant Hasan Yıldırım from Istanbul Gelişim University presented their groundbreaking study titled “Vehicle Lock Security Against Radio Frequency Attacks” at the MEKON - Mechatronics Student Conference 2025, achieving significant recognition by thoroughly investigating security vulnerabilities in the 433 MHz radio frequency (RF)-based key fob systems of autonomous vehicles and and proposing an innovative Arduino-based dynamic encryption solution to counter these threats;

utilizing the HackRF One software-defined radio (SDR) device and GNU Radio open-source signal processing software, the team captured and analyzed the “unlock” command of a key fob, demonstrating that signals could be easily intercepted and replayed using low-cost tools, thus highlighting real-world security risks; to address this, they developed an algorithm that generates a unique encryption key for each command based on a timestamp and a shared secret key, verifies signals at the vehicle’s receiver, and rejects previously used signals to prevent replay attacks, successfully testing lock and unlock commands through a custom key fob simulation built with an Arduino microcontroller and RF transmitter module; the system’s real-time performance and cost-effective applicability underscored its potential to enhance the security of RF-based communication systems in the automotive industry, earning widespread acclaim from academics and students alike at MEKON 2025, and affirming the capability of Turkey’s emerging talent in mechatronics and cybersecurity to play a pivotal role in shaping the future of autonomous vehicle technologies on a global scale.

ACTUEL TOPICS IN ENGINEERING AND ARCHITECTURE

● INDUSTRIAL ENGINEERING ●

INDUSTRIAL ENGINEERING: THE DISCIPLINE THAT DESIGNS THE FUTURE–

RES. ASST. DUYGU TÜYLÜ

In today's world where concepts such as digitalization, sustainability and artificial intelligence are rapidly becoming the center of life, Industrial Engineering is taking on a more strategic and transformative role than ever before. Industrial engineers, who work to make systems more efficient, flexible and intelligent in many different areas such as the service sector, healthcare systems, logistics networks, supply chains and energy management, not only in production processes, but also in many other areas, are no longer just improving existing systems; they are also taking on the responsibility of designing sustainable and digital infrastructures of the future.

Today's understanding of industrial engineering is experiencing a multidisciplinary transformation process by intertwining with current approaches such as data science, machine learning, sustainable production, IoT, blockchain technology and digital twin. This discipline produces solutions not only with technical calculations but also with a systems approach that takes into account the interaction of people, processes and technology. In this respect, industrial engineering directs the workforce of the future by training innovative, analytical and application-oriented engineers who can address complex problems from a holistic perspective.

LOW-CODE/NO-CODE PLATFORMS: A THREAT OR A SUPPORT TO TRADITIONAL CODING?-

RES. ASST. AYŞE ÇOBAN

The world of software development has been undergoing a significant transformation in recent years. At the heart of this change are the emerging "Low-Code" and "No-Code" platforms, designed to make software development faster, more accessible, and more cost-effective. These systems largely eliminate the need for detailed manual coding traditionally required in software projects, allowing users to build applications through visual interfaces. The growing demand for digital transformation in the business world and the increasing shortage of experienced developers have further accelerated interest in these platforms.

Low-Code platforms enable the implementation of complex functions with minimal manual coding. Users can design workflows using drag-and-drop interfaces and customize them when necessary by writing code. No-Code platforms take this a step further by offering a completely code-free development experience. With these tools, even individuals with limited technical knowledge can create basic mobile applications, workflows, or data management systems. Departments such as marketing, human resources, and operations, which are often non-technical, are now able to develop custom solutions tailored to their needs without relying on software development teams.

However, these developments have sparked some debates. Within software engineering circles, there are concerns that such tools might erode core development skills and reduce overall code quality. Some experts argue that applications built on these platforms may be difficult to maintain or scale in the long term. The “black-box” nature of these systems may prevent developers from fully understanding the underlying processes. Additionally, when it comes to critical areas like security and data privacy, these platforms still offer more limited options compared to traditional methods.

The education sector cannot remain indifferent to this transformation. Software engineering education should not only focus on coding skills but also include awareness and critical evaluation of such platforms. Students should be equipped to assess both the opportunities and limitations of these tools. It is important to emphasize that individuals with a solid foundation in programming are able to use these platforms more effectively and responsibly; therefore, foundational coding education should remain a priority.

In conclusion, Low-Code and No-Code platforms are powerful tools that democratize and broaden access to software creation. Rather than being a threat to traditional software development, they serve as a complementary force when used appropriately. In the near future, developers who are both proficient in traditional programming and capable of effectively utilizing these platforms will stand out as valuable hybrid professionals in the software industry.

FACULTY OF ENGINEERING AND ARCHITECTURE

ACADEMIC AND SCIENTIFIC ACTIVITIES

MONTHLY BULLETIN

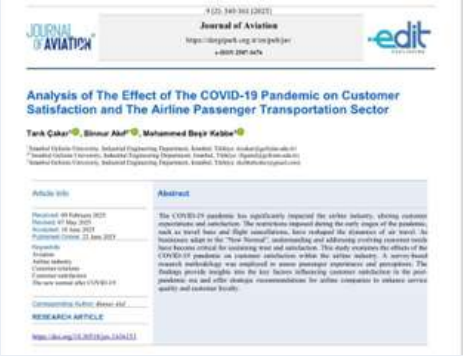
JUNE
2025

ACADEMIC AND SCIENTIFIC ACTIVITIES

● ELECTRICAL AND ELECTRONICS ENGINEERING ●

The work of our instructor Assist. Prof. Yusuf Gürcan ŞAHİN is given below.
“Comparative Modelling and Simulation of I-V Characteristics in Solar Panels with Resistance-Based Performance Analysis”, A. K. bin K., M. B. Saihun, Y. G. ŞAHİN, 7th International Black Sea Modern Scientific Research Congress, June 24-26, 2025 Artvin, Türkiye

● INDUSTRIAL ENGINEERING ●


Journal of Aviation

Analysis of The Effect of The COVID-19 Pandemic on Customer Satisfaction and The Airline Passenger Transportation Sector

The article titled “Analysis of The Effect of The COVID-19 Pandemic on Customer Satisfaction and The Airline Passenger Transportation Sector”, written by Prof. Dr. Tarık Çakar and Assit. Prof. Binnur Akıf faculty members of the Industrial Engineering Department of Istanbul Gelişim University, was published in the Journal of Aviation.
For access doi: https://doi.org/ 10.30518/jav .1636153

● MECHATRONICS ENGINEERING ●

The book chapter titled "Investigation of Organic Rankine Cycle for Power Generation from Marine Diesel Generator Waste Heat" by Dr. Haydar Kepekçi, a faculty member in the Department of Mechatronics Engineering, has been published in the international book 'Energy Rationality and Management for Decarbonization', which is indexed in the Web of Science (WOS) and published by Springer.

● ARCHITECTURE ●


Beykent Üniversitesi Fen ve Mühendislik Bilimleri Dergisi 2025, 18(1), 31-
Beykent University Journal of Science and Engineering 2025, 18(1), 31-

Makale Türü: Araştırma Makalesi
Paper Type: Research Article

EDİRNE'DE BİR ENDÜSTRİ MİRASI: BALON HANGARI VE YENİ İŞLEVLENDİRİLMESİ

AN INDUSTRIAL HERITAGE IN EDIRNE: THE BALOON HANGAR and ITS ADAPT RE-USE

DOI: 10.20854/bujse.1635894

The article titled 'An Industrial Heritage in Edirne: Balloon Hangar and its Re-functionalization' has been published in Beykent University Journal of Science and Engineering Sciences. You can access the article at https://dergipark.org.tr/tr/pub/bujse/issue/93305/1635894.

ACADEMIC AND SCIENTIFIC ACTIVITIES

● CIVIL ENGINEERING ●

The Department Chair of Civil Engineering, Asst. Prof. Dr. Ahmad Reshad NOORI, has published a new scholarly article titled “Static Analysis of Axisymmetric Thin Cylindrical Shell Using the Complementary Functions Method.”

The study focuses on the static behavior of axisymmetric thin cylindrical shells, which are critical components in various engineering applications. It analyzes the response of shells made from homogeneous, isotropic, and linear elastic materials under different loading conditions. The governing differential equations, derived based on the principle of minimum total potential energy, are solved using the Complementary Functions Method (CFM) — a reliable and efficient numerical approach.

The method was implemented in Wolfram Mathematica, and the results were compared with existing studies in the literature, showing strong agreement and confirming the accuracy and effectiveness of the proposed approach. The findings also emphasize that the type of loading has a significant impact on the shell's structural behavior.

Asst. Prof. Dr. Ahmad Reshad NOORI, Chair of the Civil Engineering Department at Istanbul Gelisim University, is contributing as a researcher to the project titled “Static and Dynamic Analysis of Functionally Graded Porous Sandwich Shell Problems.” The study represents a significant scientific effort in the field of advanced structural engineering.

The project, which is planned to span 12 months, is led by Assoc. Prof. Dr. Yurdakul AYGÖRMEZ and conducted in collaboration with Res. Asst. Asena Pınar ÖZER and Asst. Prof. Dr. Ahmad Reshad NOORI. It aims to investigate the static and dynamic behavior of functionally graded and porous sandwich shell structures — components widely used in engineering systems — using advanced mathematical and numerical modeling techniques.

Within the scope of the project, structural performance under various thermal, loading, and boundary conditions will be analyzed to better understand the strength and stability of such shell structures. The findings are expected to contribute to the development of safer and more efficient structural designs. Moreover, the analytical models generated from this research are anticipated to provide valuable insights for the application of functionally graded materials in the defense, aerospace, automotive, and biomedical industries.

ACADEMIC AND SCIENTIFIC ACTIVITIES

● CIVIL ENGINEERING ●

We are pleased to announce that Asst. Prof. Dr. Sajedeh N. SIGAROODI, a faculty member of our Civil Engineering Department, has authored a new e-book titled “Matematiksel Simülasyon: Teori, Uygulama ve Karar Destek” published by Platanus Publishing.
This comprehensive work explores the integration of mathematical modeling and simulation techniques with decision support systems. The book covers theoretical foundations, practical applications, and modeling strategies aimed at optimizing decision-making processes across a range of fields, from engineering to management.
Serving as a valuable resource for researchers, academics, and professionals interested in mathematical reasoning, analytical problem-solving, and systematic decision-making, this e-book is also a strong reference for graduate-level studies and professional development.

A research article authored by Res. Asst. Kemal ERTUNÇ, a faculty member of our Civil Engineering Department, titled “Investigation of Stability Behavior of Clamped Functionally Graded Cylindrical Shells in Elastic Medium under Lateral Pressure” has been published.
This study analyzes the stability of cylindrical shells made of functionally graded materials (FGMs) under external pressure in an elastic medium, within the framework of Donnell-type shell theory. The fundamental equations of FGM cylindrical shells resting on a Pasternak elastic foundation were derived based on Kirchhoff-Love theory and solved using the Galerkin method. Analytical expressions for critical lateral pressure were obtained under clamped boundary conditions. Numerical analyses were carried out by considering various FGM volume fractions, elastic foundation coefficients, and geometric characteristics of the shell. The results offer valuable insights into the stability behavior of functionally graded cylindrical shells under complex loading conditions.

Oğuzhan Murat HALAT, a research assistant in the Department of Civil Engineering at Istanbul Gelisim University, is taking part as a researcher in the project titled “Enhancing Flood Simulation Capabilities of Distributed Hydrologic Models Using Satellite Data”, conducted under the supervision of Prof. Dr. Mehmet Cüneyd DEMİREL.
The project addresses the increasing frequency and severity of flood events resulting from recent extreme meteorological phenomena. It aims to improve the performance of physically-based hydrologic models by utilizing remote sensing products and satellite-based precipitation data in model calibration processes. In addition to ground-based data, various satellite datasets will be used to strengthen model accuracy, and different optimization algorithms will be applied to assess the performance of objective functions.
The project includes pilot studies in selected catchments in Türkiye and Europe to test the generalizability of the approach. The ultimate goal is to develop a more reliable and broadly applicable flood modeling method, especially for basins with limited or no observational data. The outcomes of this research are expected to contribute to early warning systems, disaster management strategies, and infrastructure planning.

• TAG •

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