



SABANCI UNIVERSITY

# Faculty of Engineering and Natural Sciences

ANNUAL REPORT

2019-2020

ACADEMIC YEAR

Sabancı  
Universitesi

FACULTY OF  
ENGINEERING AND  
NATURAL SCIENCES

# Dean's Message



**I am extremely pleased to share with you the FENS Activity Report for the 2019-2020 academic year. For brevity, I summarize the activities and give some of the highlights as the details can be found in the rest of this report.**

Concerning education, a total of 2373 students were enrolled in all FENS undergraduate programs, while the numbers of master and doctoral students are 323 and 238, respectively. Also, FENS programs graduated 542 undergraduates, 153 master, and 20 doctoral students in the academic year of 2019-2020 (pages 4-6).

From education point of view, this academic year brought additional challenges especially in the spring term due to COVID-19 pandemic. Our university quickly rose to those challenges by switching to online teaching within a week and started using advanced online teaching and learning platforms successfully, which was confirmed by student reactions as 70% of our students found the online education either 'successful' or "very successful' (page 35). Another important highlight is that our faculty members started contributing to COVID-19 research as well (page 36).

It is a great pleasure to announce our new master program, Data Science Master's degree program. Data science is an extremely popular field of study, in which we have great expertise and potential (page 27). Also, we increase our collaboration with leading universities around the world that see Sabancı University as a partner in research and education as exemplified by our new double PhD degree Program in Microelectronics with National Chiao Tung University (NCTU) of Taiwan (page 26).

While two new faculty members joined our ranks (page 7) in this academic year, Alev Topuzoğlu and Ali Alpar were appointed as Emeritus faculty members (page 37). We welcome our new members, and congratulate our emeritus faculty members and thank them for their contributions to our university.

Our research output was impressive in this academic year as well. Not only our faculty members but also post-graduate researchers and our students contributed to this by publishing at high impact journals and presenting their research outputs in other prestigious avenues. In the year of 2019, FENS produced a total of 288 articles, 64.5% and 35,1% of which are published in journals in the category of Q1 and Top 10% Journal Quartile by CiteScore Percentile, respectively. The 2019 publications are cited 1499

times and 132 of them are with co-authors from Europe. The FENS research portfolio had reached 81 projects with a total budget of 79.3 million TL as of June 2020. As you can read on pages 19-23, our faculty members participated in high-impact and prestigious research projects.

“Growing with Research Centers” is a maxim, which expresses our strategy for increasing the impact of our research output by creating pathways from basic science to applications. Our faculty members maintain strong ties with our four centers, namely SUNUM, IMC, VERIM and EFSUN, all of which had their inceptions within our faculty.

We are proud to announce that our faculty members won prestigious national and international awards and recognitions including TUBA GEBIP Award, Science Academy BAGEP Award, METU Mustafa Parlar Award. Also, our three faculty members were included in the list of most influential scientists of the world. Similarly, our undergraduate and graduate students as well as our alumni received national and international awards (pages 28-34). We enthusiastically congratulate them. Finally, we also congratulate the recipients of Dr. Gürsel Sönmez Research Award and Sakıp Sabancı Award for Highest Ranking Undergraduate Student (page 34)

Lastly, our successful “Industry Focused Projects (Sanayi Odaklı Projeler, SOP)” program for senior projects entered its fifth year, with 41 companies which have participated in the program as project stakeholders since its inception in 2016. A total of 243 senior students worked in 73 projects (pages 24-25).

By working hard, staying focused on our strategic targets, “creating and developing together”, and investing in the human capital, Sabancı University has been setting an example for other universities around the world by being always in the frontiers in research as well as in education. I would like to invite all of you to join us in the celebration of our achievements, a part of which is documented in this report.

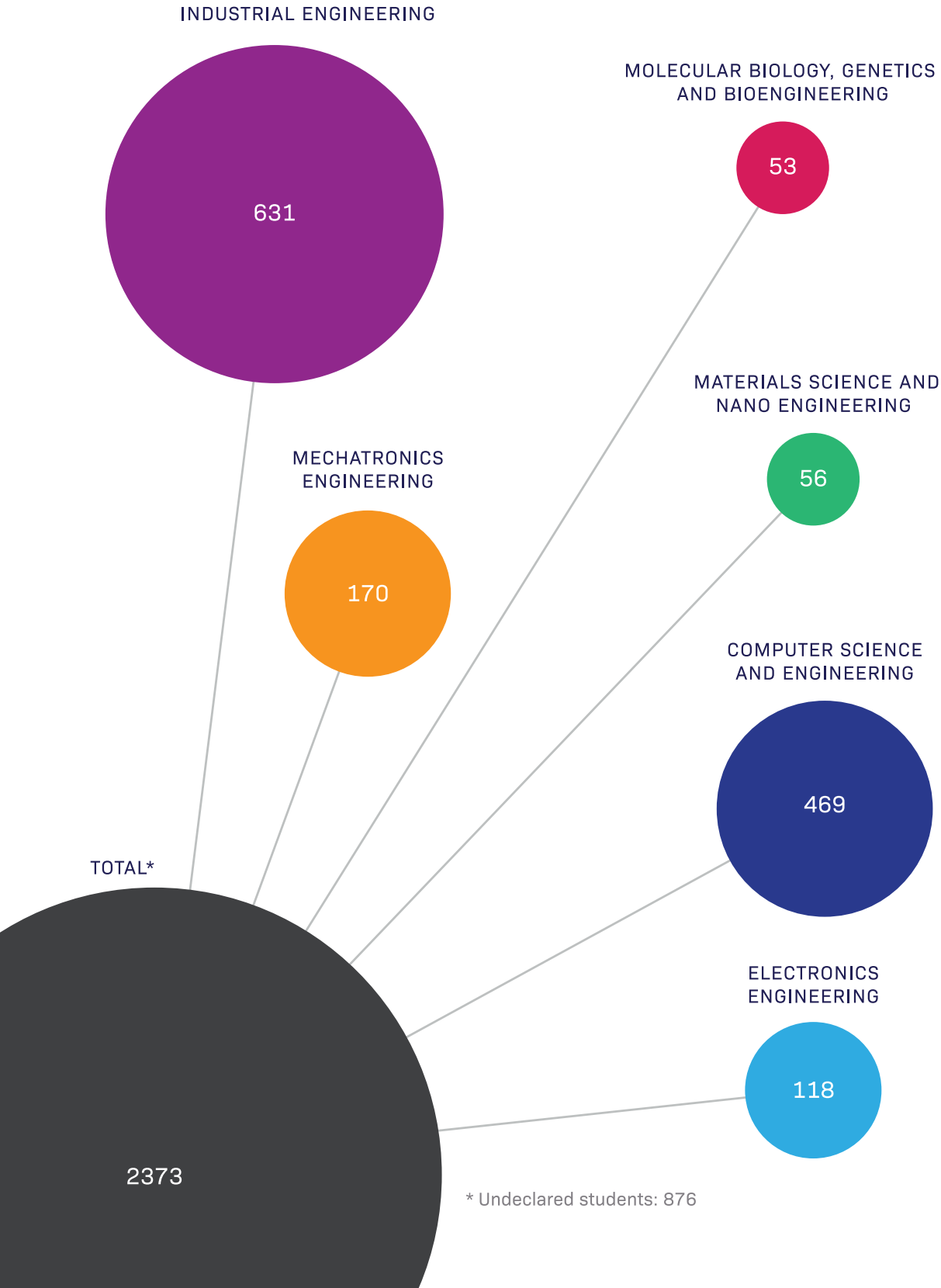
***Erkay Savaş***

*Dean*

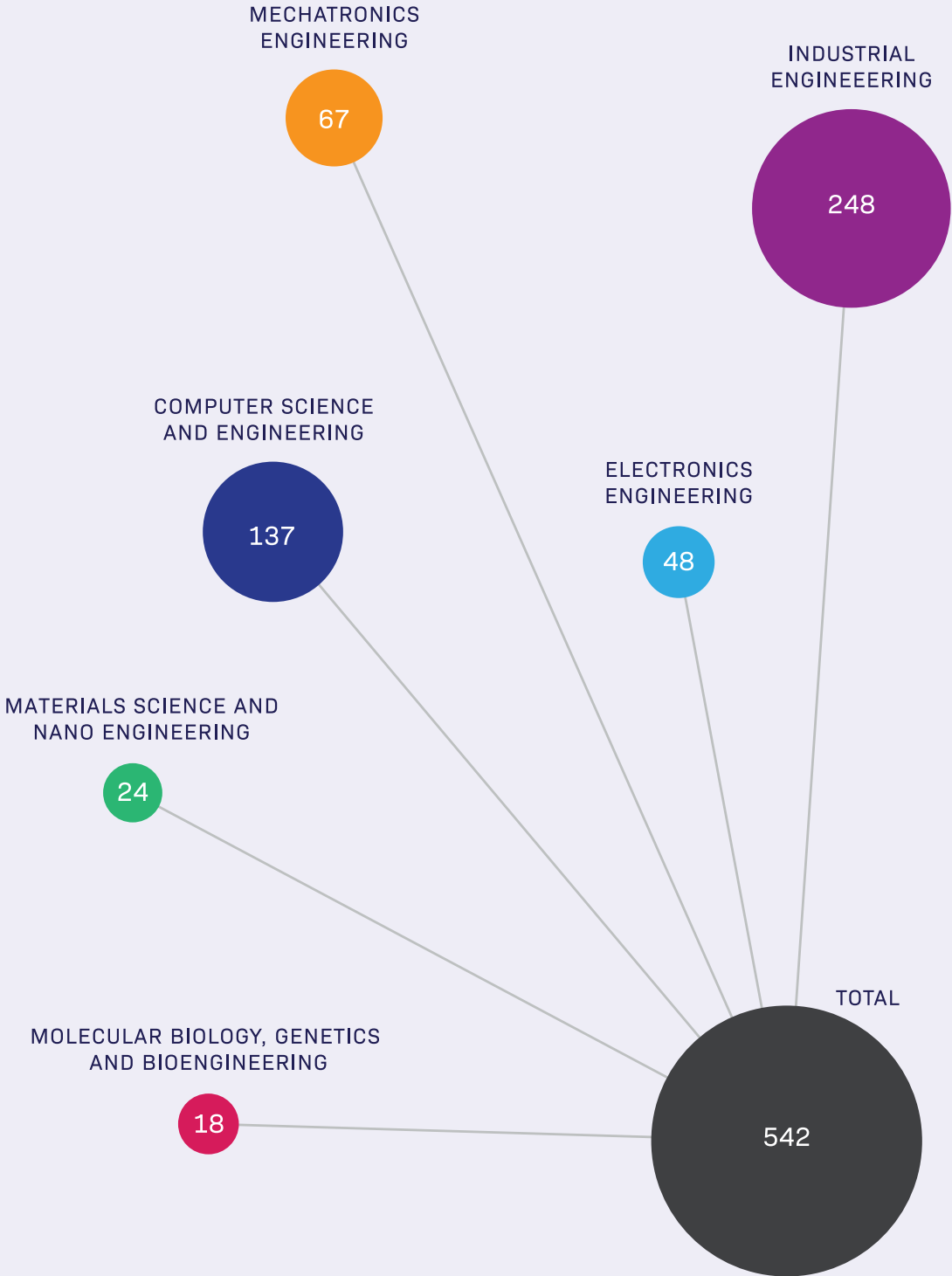
*Faculty of Engineering and Natural Sciences*

# Student Numbers

## Undergraduate Student Enrollment 2019–2020

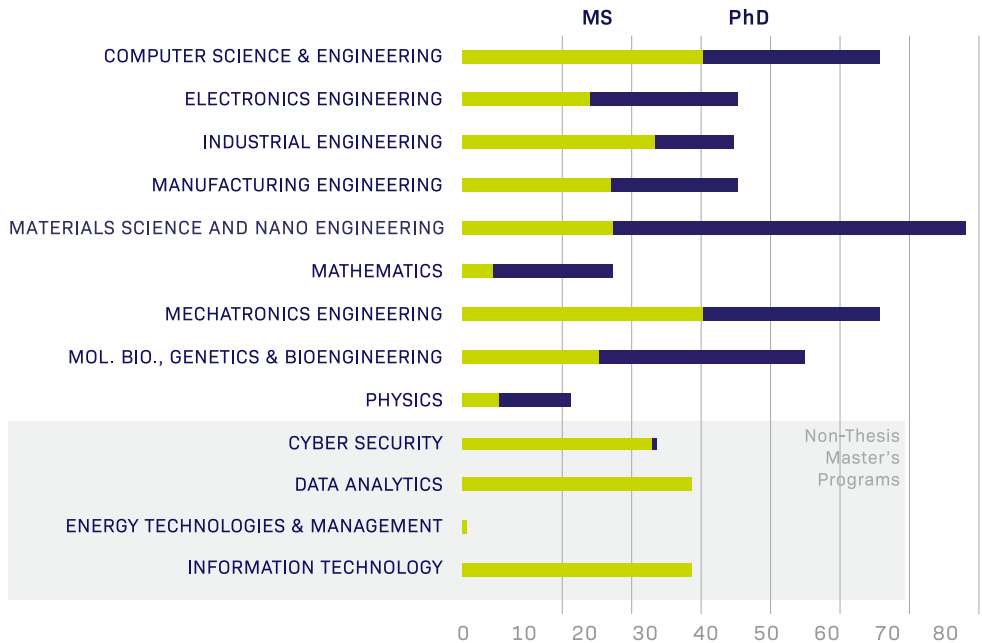
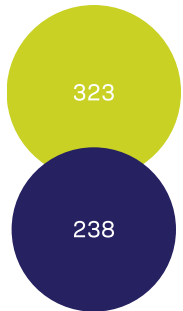


# Undergraduate Student Alumni 2019–2020

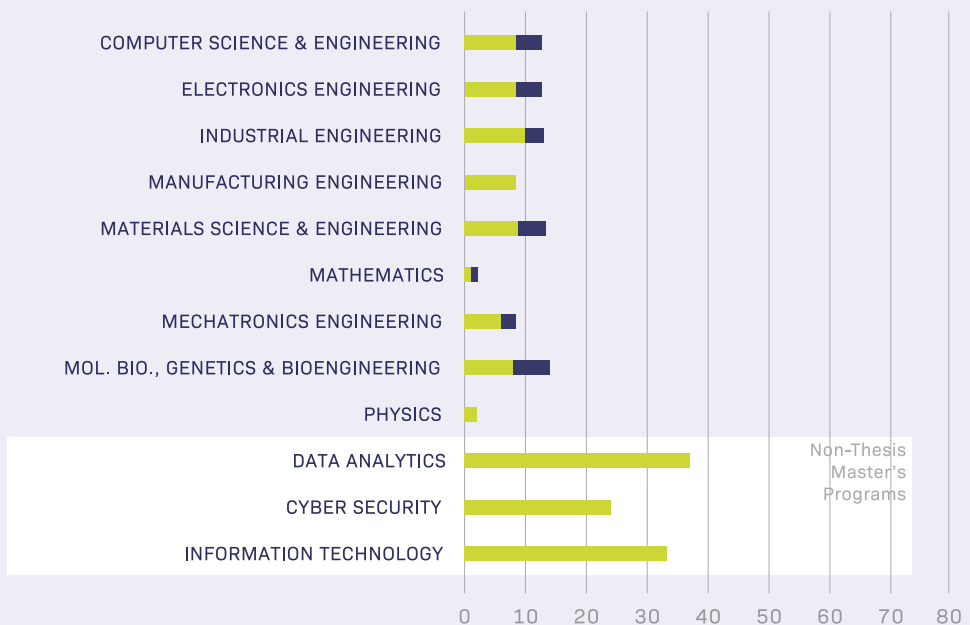


# Student Numbers

## Graduate Student Enrollment 2019–2020



## Graduate Student Alumni 2019–2020



# Newcomers

2 new faculty joined FENS to bring the full time total to 110.



**Adnan Kefal**  
**MECHATRONICS  
ENGINEERING**

Adnan Kefal is a faculty member in the Faculty of Engineering and Natural Sciences at

Sabanci University, affiliated with Mechatronics Engineering Undergraduate and Manufacturing Engineering Graduate Programs. Currently, he is also affiliated with Sabanci University Integrated Manufacturing Research and Application Center. Adnan received his BSc degree in Naval Architecture and Marine Engineering from Istanbul Technical University in 2013. He then attended the University of Strathclyde, Glasgow and received his PhD degree in the fields of Structural Health Monitoring and Computational Mechanics in 2017. He developed novel inverse finite element methods (iFEM) for real-time shape and stress sensing of engineering structures composed of thin and/or moderately thick beam/plate/shell components. During his PhD studies, he also worked as a visiting researcher at NASA Langley Research Center in summer 2016, where he enhanced the iFEM approaches toward applications to composite structures using fiber optic sensors. Prior to joining Sabanci University, he served as an Assistant Professor and the Vice Dean of Research & Development at the Faculty of Naval Architecture and Ocean Engineering, Istanbul Technical University in 2018-2020. His research activities involve (i) sensor technology, real-time in situ data processing, and structural digital twin in engineering, (ii) topology optimization for additive manufacturing, (iii) numerical and experimental structural mechanics of 2D/3D composite structures including fracture, damage, fatigue analyses, (iv) structural design optimization of laminated structures, (v) piezoelectric sensor design for energy harvesting and parameter identification processes, and (vi) complex fluid-structure interaction analysis of large-scale engineering structures. To this end, Adnan and

his research group at Sabanci University develop novel computational (mesh-based or meshless) and experimental methods and perform key industrial applications in the fields of mechanical, aerospace, marine, civil, automobile, and manufacturing engineering.



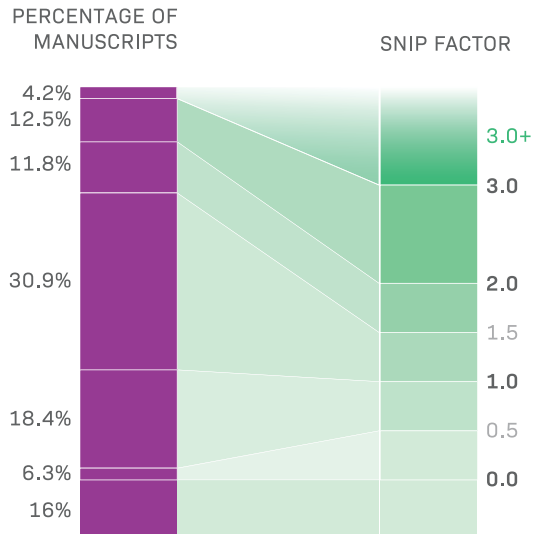
**Beste Başçiftçi**  
**INDUSTRIAL ENGINEERING**

Beste Basciftci is a Faculty Member in the Industrial Engineering program. She obtained her BS degrees in Computer

Engineering and Industrial Engineering (double major) with High Honors from Bogazici University in 2013. She then obtained her MS degree in Industrial Engineering from Bogazici University in 2015. Afterwards, she received her PhD degree in Operations Research with a minor in Statistics from the H. Milton Stewart School of Industrial and Systems Engineering at Georgia Institute of Technology in 2019. Before joining Sabanci University, she worked as a Postdoctoral Fellow at Georgia Institute of Technology. Her research has been awarded with several prestigious awards including INFORMS Energy, Natural Resources, and the Environment Section Best Student Paper Award and Georgia Institute of Technology Alice and John Jarvis PhD Research Award. Her research mainly focuses on data-driven decision making under uncertainty with a methodological interest in mixed-integer programming, stochastic programming, distributionally robust optimization in various problem settings involving applications in energy systems, supply chains, smart city operations, asset management and mobility.

# Publications

## SNIP Factor Distribution



### FENS 2019

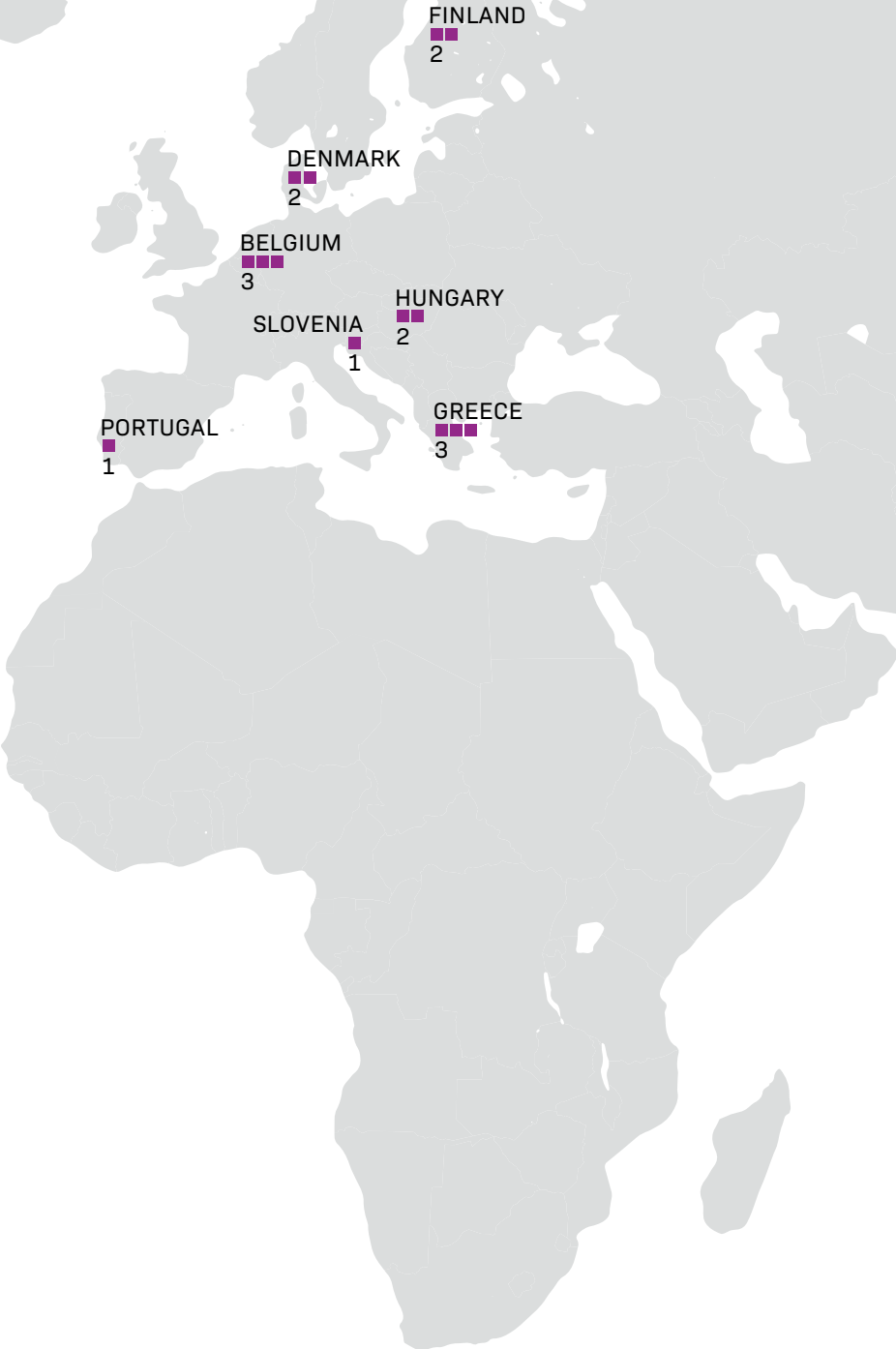
Scholarly Output	288
Citation Count	1499
Field-Weighted Citation Impact	1,2
Publications in Q1 Journal Quartile by CiteScore (%)	64,5
Publications in Top 10% Journal Percentiles by CiteScore Percentile (%)	35,1

## Web of Science Categories

MATERIALS SCIENCE & ENGINEERING	64	
ELECTRONICS ENGINEERING	62	
MECHATRONICS ENGINEERING	45	
COMPUTER SCIENCE & ENGINEERING	34	
INDUSTRIAL ENGINEERING	34	
MOL. BIO., GENETICS & BIOENGINEERING	34	
MATHEMATICS	20	
PHYSICS	18	



132 Papers Published in 2019  
with Collaborations from Europe



# Publications





288 Papers Published in 2019  
with Collaborations from All  
Around the World





# Projects

**Source** as of June 2020

-  EU
-  Non-Governmental Organizations/University/Other
-  TUBITAK
-  Business Enterprises

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## FACULTY OF ENGINEERING AND NATURAL SCIENCES

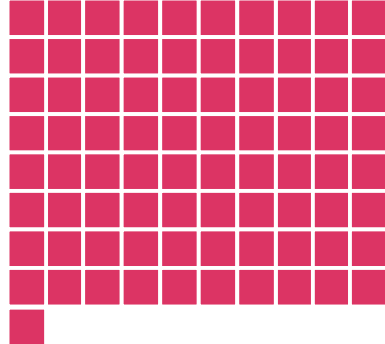
6 Projects  
₺ 10.8 M



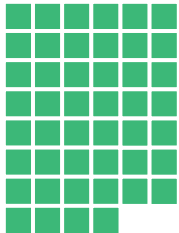
10 Projects  
₺ 31.1 M



81 Projects  
₺ 79.3 M



46 Projects  
₺ 43,9 M



\*The budgets of Sabancı University Research and Application Center (SUNUM), Integrated Manufacturing Research and Application Center (SU IMC) and Center of Excellence in Data Analytics (CEDA) are included.

# Centers

## Growing with our Centers: Research Synergy in the Ecosystem



**FENS is proud of the four Centers, SUNUM, IMC, VERIM and EFSUN, that emerged from it and have taken pioneering roles in the ecosystem in a very short time. FENS faculty members and researchers now have strong collaborations with these centers in varying degrees, from full affiliation to partnerships in joint projects.**

These emerging powerhouses provide technological and scientific solutions to local global challenges while creating socio-economic added value. In an impressively short amount of time they have become centers of attraction where new ideas can flourish easily for multidisciplinary and cross-disciplinary research and collaboration with their high impact outputs. The scientifically nourishing environment these centers create enable top notch training of high calibre researchers, thus making a valuable contribution to the future of science.

# Sabancı University Integrated Manufacturing Research and Application Center (SU IMC)



Sabancı University Integrated Manufacturing Research and Application Center (SU IMC) is the industrial scale research and technology development center that was established in 2016. SU IMC provides fundamental and applied research and facilities for design and analysis, product development, process prototyping, manufacturing, incubation services and commercialization opportunities in integrated manufacturing technologies. With the strong synergy it has created especially with the industrial landscape, SU IMC has positioned itself as a high-ranking dynamo of competitive research and technological development in the region.

More details about SU IMC can be found at <http://suimc.sabanciuniv.edu/>

# Sabancı University Nanotechnology Research and Application Center (SUNUM)



Sabancı University Nanotechnology Research and Application Center (SUNUM), established in 2010, with 35 Million USD investment by the Turkish Ministry of Development and Sabancı Foundation. Currently, it is a center of excellence housing high-calibre researchers and infrastructure for multidisciplinary and cross-disciplinary research and development studies, to provide global nano-technological solutions to societal challenges. Its strategic focus is on nanomaterials, nanostructures and nano-systems for applications in nanobiotechnologies and energy. In 2016, SUNUM was selected as one of the four National Research Infrastructure centers, subsequent to a very competitive screening process by the Ministry of Development. SUNUM's main mission as an effective interface between academia and industry, is to create socio-economic added-value through commercialization of research results by exploiting synergies and long term strategic partnerships with stakeholders while contributing to the training of high-calibre researchers and initiating start-ups.

Further details about SUNUM and its research activities can be found through the virtual tour at <http://sunum360.sabanciuniv.edu/> and its official website <https://sunum.sabanciuniv.edu>

# Center of Excellence for Functional Surfaces and Interfaces (EFSUN)



Center of Excellence for Functional Surfaces and Interfaces (EFSUN) aims to address challenges in functional surfaces and interfaces through the usage of micron- and submicron sized systems exploiting the tools of medicine/molecular biology, material science, nano technology, nano/microfluidics and power generation. EFSUN has a unique purpose of generating novel approaches and scientific knowledge on a very important and yet in-demand study area of new generation diagnostic tools in medicine. It also aims to spur interest both in the private sector and government organizations in healthcare, enabling future collaborations. Besides the prestigious research projects, EFSUN's outreach activities aimed to inspire and stimulate the field have been attracting attention; two of these activities are: the Best Article Competition that has been garnering a lot interest from researchers, and The Winter Nanotechnology School for High School Students, that has been organized in cooperation with SUNUM to nurture curiosity and foster love of science in young minds.

<https://efsun.sabanciuniv.edu>



# Center of Excellence in Data Analytics (VERİM)



Center of Excellence in Data Analytics (VERİM) was founded in 2016 with the goal of becoming the leading center in data science through world-class, multidisciplinary research on challenging real-world problems; to work with the industry and public institutions to help them generate business value from data; to disseminate knowledge and know-how to the industry, academic institutions and other stakeholders. Collecting big data-related research under one roof, VERİM aims to improve the dissemination of data science related research of different disciplines and enhance cooperation among them. It also aims to provide accessible R&D support to industry, on challenging data science problems, which often require an inter-disciplinary approach. VERİM covers a vast spectrum of topics, which is evident in its latest high-impact research projects, ranging from hate speech detection using deep learning to detecting Covid-19 infection

on CT images. Aiming to support data science education at all levels and raise awareness of the critical importance of data-related research in today's world, VERİM organizes VERİM Data Science Summer School every year and contributes to the Advanced Data Analytics Academy, both with ever-increasing popularity.



<https://verim.sabanciuniv.edu>

# Our Stories



# Building a Giant: Sabanci University Becomes a Partner in the prestigious eXTP Project

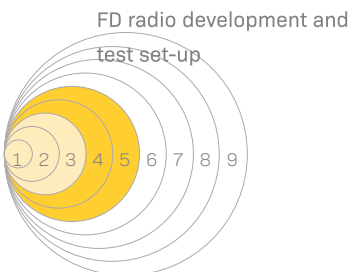
***“While SU scientists have contributed successfully to many large space missions on high energy astrophysics through scientific observations, this is the first time that the engineers and scientists from Turkey are contributing to a large scientific mission on the hardware level. This is a gigantic step for SU, and also for Turkey to become part of the elite community building scientific space missions.”***



Emrah Kalemci

The enhanced X-ray Timing and Polarimetry mission (eXTP) aims the design and launching of a satellite to observe and study the state of matter under extreme conditions of density, gravity and magnetism. The project is led by the Institute of High Energy Physics of the Chinese Academy of Sciences (CAS), and the eXTP consortium includes numerous institutes from China and Europe. Turkey is the only member of the European consortium which is not a member of the European Space Agency (ESA).

The Turkish eXTP consortium is led by Prof. Emrah Kalemci as the PI of the project sponsored by the Turkish Space Agency, and is supported by the Space Technologies Research Institute of TÜBİTAK (Turkish Scientific and Technological Research Council.) Prof. Kalemci, as the leader of the High Energy Astrophysics Detector Laboratory of Sabanci University, is highly experienced in the development of scientific observation satellites: he acted as the PI of the XRD/BeEagleSAT project; and currently leads the iXRD/Sharjah-Sat-1 project. He was also a contributor in numerous other projects, such as the STROBE-X of NASA, and INTEGRAL of ESA. His research focuses on high energy astrophysics, multi-wavelength and timing observations of black holes, and the development of CdZnTe based hard X-ray detectors for space and healthcare industry.

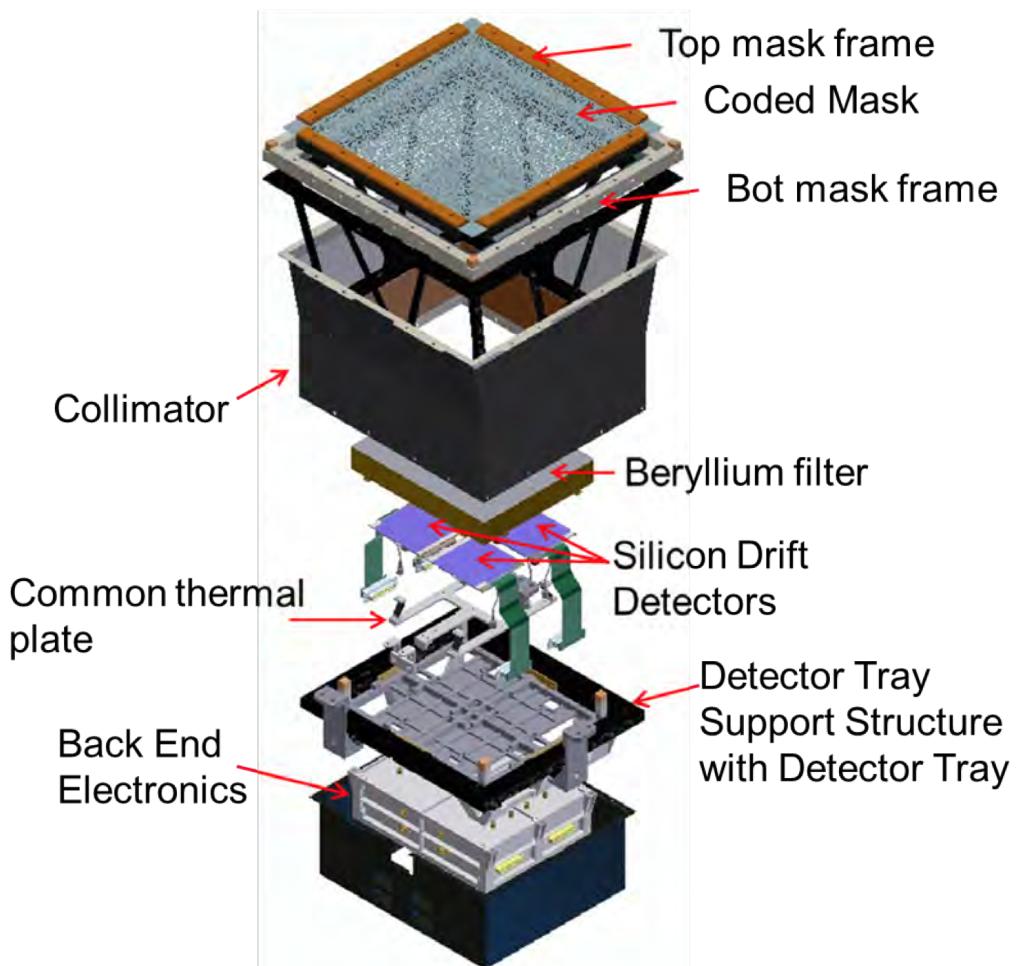


Prof. Ayhan Bozkurt and Prof. Ahmet Onat of SU, with their expertise in embedded systems and real-time computing, will contribute to the design and development of the control software of the WFM. The science PI of the project in Turkey is Prof. Ersin Göğüş who specializes in neutron stars and gamma-ray bursts.

The ultimate goal of the project is designing, developing and testing the WFM Instrument Control Unit software. The project is currently in phase B, in which most of the activities revolve around the design of the software and its associated documentation that should adhere to strict regulations of the ESA. This requires an in-depth knowledge of the operation of the WFM instrument, as well as a solid understanding of coding standards employed in the development of software for space missions.

Prof. Kalemci says ‘being part of the eXTP consortium is a remarkable privilege: this marks the first time that Turkish scientists and engineers are participating in the hardware development of an internationally acclaimed large satellite project’.

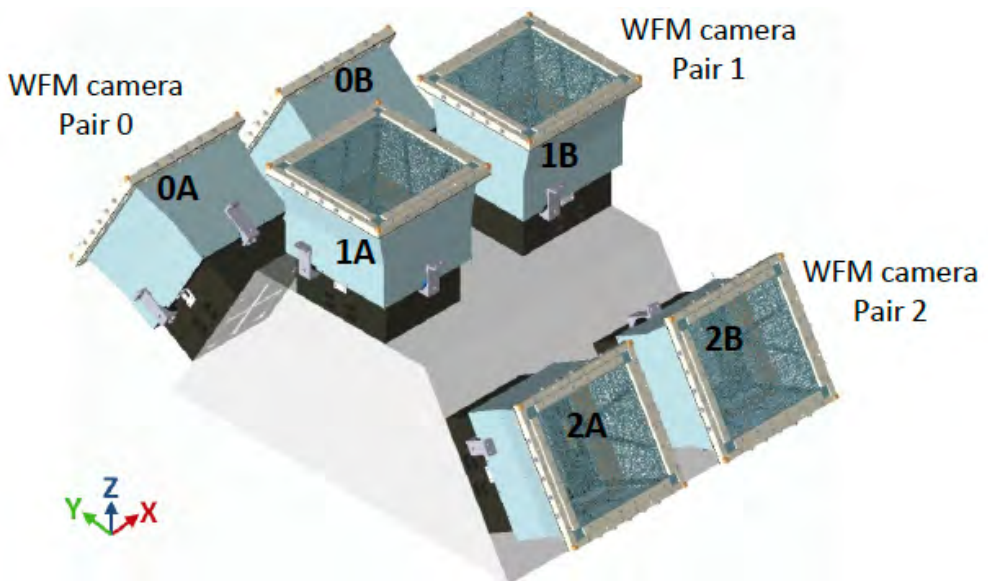
Work conducted in phase-B of the project will give numerous opportunities to the Turkish astrophysics and engineering community to apply their scientific knowledge to the development of X-ray observation satellites, and will not just make them ready for phases C and D, but will give them the opportunity to shape the project.



When launched in 2027, eXTP will become one of the biggest X-ray astrophysical satellites ever constructed, not just in weight (which is estimated as 4.5 tonnes), but in cost, which is expected to reach a few hundred million dollars.

Scientific instruments on the satellite include two instruments from China, the Spectroscopic Focusing Array (SFA) and the Polarimetry Focusing Array (PFA), and two instruments from Europe, the Large Area detector (LAD), and the Wide Field Monitor (WFM) [RESIM-2], the last of which falls into the area of expertise of the Turkish team.

These instruments will facilitate the observation of the most exotic objects in the universe, such as neutron stars and black holes, with an unprecedented sensitivity and precision, thanks to its substantial effective area and very high timing resolution.



# Establishing the National High-Performance Computing Competence Center

***“Within the project, in addition to offering workshops that are freely available to both participants from academia and industry, we partner with companies in specific case studies. For example, we work with a bank that uses machine learning on massive data and a glass company that uses computer-aided engineering solutions. These projects will showcase how HPC competency can help the compute-intensive industries to innovate faster and arrive at better-performing models and solutions.”***



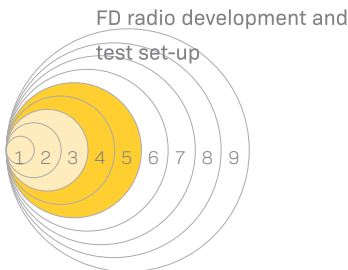
Kamer Kaya

The European High-Performance Computing Joint Undertaking (EuroHPC JU) was launched in 2018 to support and develop High-Performance Computing (HPC) efforts across Europe. The EuroCC Project aims to establish HPC Competence Centers in Europe and increase competency in high-performance computing (HPC) in the industry. Involving 33 partners, the project will be carried out for 2 years under the coordination of Germany.

HPC Competence Center studies to be established in Turkey with the support of EuroCC will be carried out under the coordination of TÜBİTAK ULAKBİM with the participation of Middle East Technical University and Sabancı University.

The NCC activities will be supported for two years and funded 2 M Euros with %50 EU H2020 contribution. FENS researchers Kamer Kaya, Oznur Tastan, Bekir Bediz, Ahmet Demirelli, and Ogun Adebali teamed up for the EuroCC project.

Today HPC is used in many areas from computer graphics to weather forecasts, from autonomous vehicles to COVID diagnosis and treatment. Thanks to High Performance Computing, the production costs of vehicles with complex designs such as aircraft, cars, and machinery can be significantly reduced, production processes

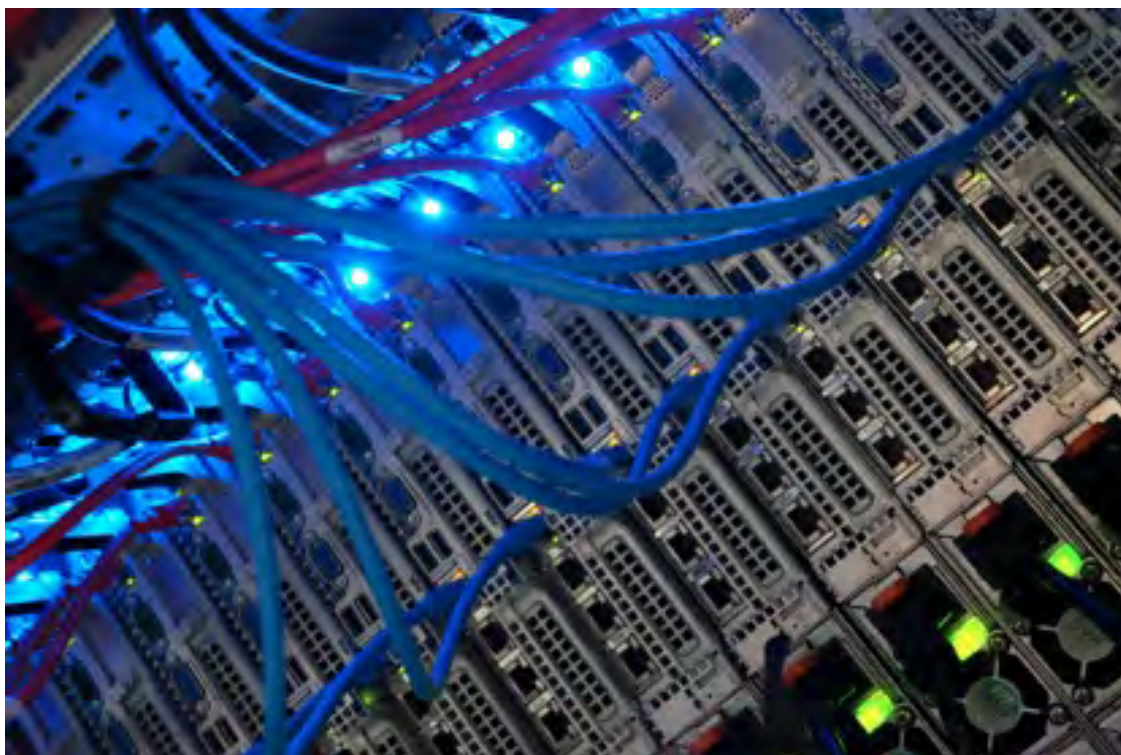




can be accelerated, fast results can be obtained in areas requiring molecular-level modeling such as personalized drug design, and complex patterns can be found in PB-sized data.

Through the establishment of national HPC Competence Centers (NCCs) in the participating countries, the EuroCC Project will support interdisciplinary collaborations in the fields of materials science, molecular dynamics, bioinformatics, fluid dynamics, machine learning, and artificial intelligence and will create a Europe-wide network of HPC Competence Centers.

EuroCC aims to reveal existing competencies, identify needs, provide training and consultancy, and initiate university-industry partnerships in the fields that can benefit from HPC. In addition, joint studies with SMEs and large companies will be carried out, a road map will be generated, and free consultancy and trainings will be provided to institutions for HPC problems when needed. In this way, it is planned to strengthen the HPC ecosystem in the country and to improve “know-how” in the field of HPC.



# Industry-Focused Projects



## WHAT IS THE INDUSTRY-FOCUSED PROJECT PROGRAM ?

The Industry - Focused Project” is a program that enables companies to attack R&D challenges together with Sabancı University Engineering and Natural Sciences undergraduates. The program is carried out by senior undergraduate students of Sabancı University as part of their compulsory “Graduation Project” with the participating company representative and Sabancı University faculty member acting as advisors. The owner of the project is the commissioning company. Sabancı University and the companies are coimplementers of the project.

This program enables industrial companies to engage in research projects that require considerable time, human resources and technical ability by cooperating with Sabancı University.

This program provide new project ventures and collaboration opportunity both for faculty members and for companies/institutions. Senior students involved in the project comprise a useful talent pool for prospective employers who find an opportunity to know and train their potential colleagues. At the end of every academic year, all SOP project outputs, posters will share both with current project stakeholders and also with potential project stakeholders via Spring Event. However 2019- 2020 academic year, this event had to canceled because of Covid-19 outbreak. In three years, apart from project stakeholders above 80 companies participated to the IFP Spring Event. These events are shared to the sectoral press and internet portals.



# OVERALL FACTS & FIGURES

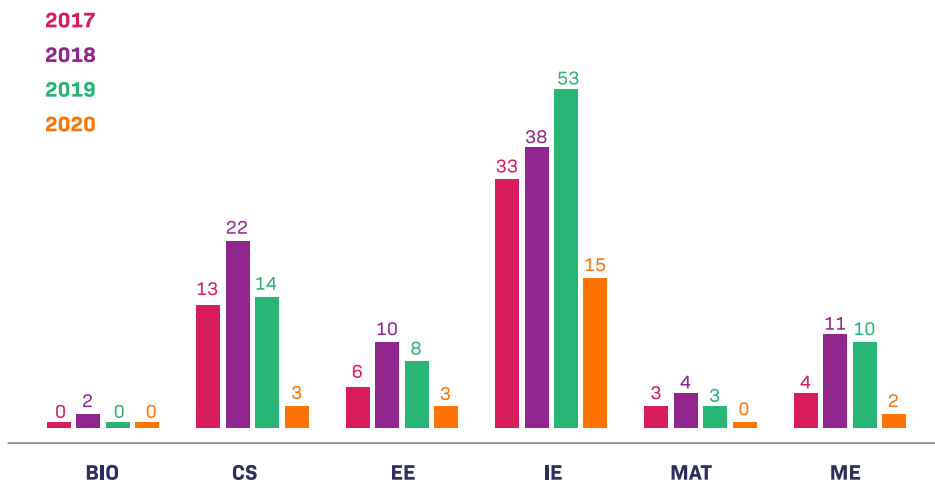
During four years since the beginning, 41 companies participated to the program as project stakeholders. Totally 73 projects were completed successfully. 248 senior students from various undergraduate programmes were assigned as a member of project working teams.

	COMPANY	PROJECT	STUDENT
2016/17	10	17	59
2017/18	13	24	78
2018/19	18	23	88
2019/20	7	9	23
Grand Total*	10	17	59

\* 7 companies participated to the program more than once

	2017	2018	2019	2020
BIO	0	2	0	0
CS	13	22	14	3
EE	6	10	8	3
IE	33	38	53	15
MAT	3	4	3	0
ME	4	11	10	2
Grand Total	59	78	88	23

## MAJOR PROGRAM DISTRIBUTIONS OF STUDENTS



# NCTU & SU Double PhD Program - Microelectronics Workshop



**A double PhD diploma program** has been developed between Sabancı University and the National Chiao Tung University (NCTU)



# New Program

## Data Science Master`s Degree Program



**Data Science Master`s Degree Program aims to provide a strong education program in the field of data science in order to meet the growing demand for data science in the world and in Turkey;** and to contribute to scientific studies in this field through joint research of faculty members from different programs.

The curriculum and the graduation requirements were carefully designed to ensure the quality of education in the new DS program.

## Research Areas

- Cloud Computing
- Data Mining
- Data Privacy and Security
- Data Visualization
- High Performance Computing
- Machine Learning
- Optimization and Decision Making
- Statistics

# Awards & News



## **PRESIDENT YUSUF LEBLEBİCİ HAS RECEIVED UNIVERSITY OF ILLINOIS DISTINGUISHED ALUMNI AWARD**

Our president Yusuf Leblebici has received the Electrical and Computer Engineering Distinguished Alumni Award from the University of Illinois at Urbana-Champaign (UIUC).

The Distinguished Alumni Award of UIUC is one of the most prestigious distinctions of the Electrical and Computer Engineering program, recognizing alumni with significant professional and technical contributions to the field. Previous recipients of the award include Nick Holonyak, inventor of LED light sources; Prith Banerjee, former Vice president of Hewlett-Packard and Schneider Electric; and Jack Kilby, inventor of integrated circuits and Nobel Laureate in Physics in 2000.

In response to the news, Yusuf Leblebici has said that he is “very proud and honoured of having been selected for such a prestigious award”. He received his PhD degree from the University of Illinois at Urbana-Champaign in 1990. He worked as a faculty member at UIUC for 3 years, and has maintained his strong ties to the university for many years.

The award will be presented to Yusuf Leblebici at a ceremony to be held at UIUC on 2nd October 2020.



## **ZEHRA SAYERS IS IN BBC'S 100 WOMEN OF 2019 LIST**

This year 100 Women is asking: what would the future look like if it were driven by women? Sabancı University Engineering and Natural Sciences Faculty Member Zehra Sayers is the only Turkish scientist in BBC's 100 women of 2019 list. Zehra Sayers has been hailed as a beacon of hope for the Middle East (Nature journal) for her success in her contribution to bringing scientists from eight Middle Eastern countries together. During her 15-year tenure as chair of the Science Advisory Committee of SESAME project, she worked with a group of scientists- including those from Israel, Palestine, Turkey and Cyprus - under the same roof to found a CERN-like laboratory. She SHARED the prestigious 2019 Award for Science Diplomacy for the feat.



**OUR FACULTY MEMBERS DURMUŞ ALI DEMİR, İSMAİL ÇAKMAK AND ERHAN BUDAK AMONG THE MOST INFLUENTIAL SCIENTISTS OF THE WORLD**

A team consisting of scientists from the United States of America and the Netherlands identified the most influential scientists of the world based on variables such as number of scientific papers, number of citations, number of authors, authorship position, and citation to own paper and using a composite indicator scientific impact index.



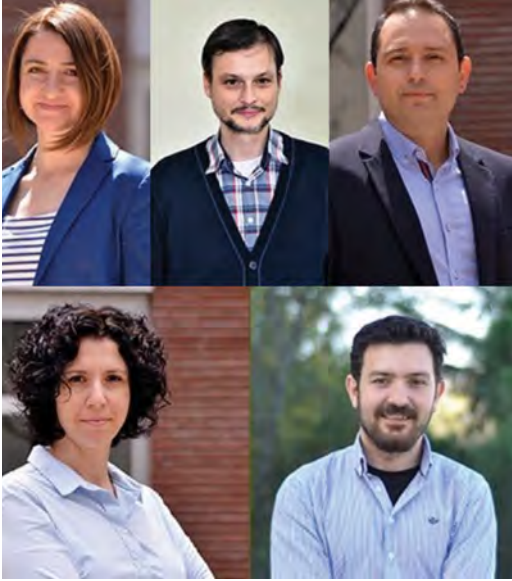
**FENS FACULTY MEMBERS RECEIVED 2020 THE SCIENCE ACADEMY BAGEP AWARDS**

Awards will be presented to FENS Faculty members Kağan Kurşungöz in Mathematics Program, Emrah Eroğlu in Molecular Biology, Genetics and Bioengineering Program.



**FENS FACULTY MEMBER TURGAY BAYRAKTAR WON THE TÜBA-GEBİP AWARD.**

# Awards & News



## THE “METU PROFESSOR MUSTAFA PARLAR FOUNDATION 2019 AWARDS”

“Members of the FENS won METU Professor Mustafa Parlar Research and Education Foundation 2019 Awards. As part of the METU Professor Mustafa Parlar Foundation 2019 Awards, Faculty of Engineering and Natural Sciences members Eralp Demir, Gözde İnce, Öznur Taştan Okan, Turgay Bayraktar and Lütfi Taner Tunç won the Research Incentive Prize.



## 2019 IKEDA RESEARCH AWARD WAS GIVEN TO TURGAY BAYRAKTAR

Sabancı University Faculty Member Turgay Bayraktar has been awarded with ‘Masatoshi Gündüz Ikeda Research Award’ given by the Mathematics Foundation for his contributions to mathematics.



## BURAK KOCUK RECIEVED BEST PUBLICATION AWARD IN ENERGY

Our faculty member Burak Kocuk’s paper entitled “Strong SOCP Relaxations for the Optimal Power Flow Problem” has received the “Best Publication Award in Energy” of the Energy, Natural Resources, and the Environment Section at the INFORMS Annual Meeting.



### **EMRE ERDEM**

Emre Erdem's article was on the cover of Nanoscale Journal



### **RABİA TUĞÇE YAZICIGİL**

2009 graduate of the Electronics Engineering Program of Sabancı University and a faculty member at Boston University, Rabia Tuğçe Yazıcıgil has received a grant support of USD 1.5 Million from National Science Foundation for her project called "SemiSynBio-II: HybridBio-Electronic Microfluidic Memory Arrays for Large-Scale Testing and Remote Deployment".



### **OSMAN ÇALDAĞ**

2020 PhD in Mechatronics Engineering Program Alumni is Osman Çaldağ's paper promoted as Editor's Pick in journal Physics of Fluids Sabancı University Mechatronics Engineering PhD 2020 alumni Hakan Osman Çaldağ's paper has been regarded as noteworthy by the editors of the prestigious fluid mechanics journal Physics of Fluids and promoted as Editor's Pick in the September 2020 issue

# Awards & News



## **ZEYNEP TEMEL**

Sabancı University Mechatronics Engineering Doctorate Program 2013 alumni Zeynep Temel was chosen to the World Economic Forum - WEF 2020 Cohort of Young Scientists.



## **AYDIN AYSU WON THE NATIONAL SCIENCE FOUNDATION CAREER AWARD**

Sabancı University Faculty of Engineering and Natural Sciences Microelectronics Program 2008 undergraduate and Electronics Engineering Program 2010 master's graduate Aydın Aysu, has received a Faculty Early Career Development award, also known as the CAREER Award, from the National Science Foundation (NSF). The award is one of the highest honors given by NSF to young faculty members in science and engineering.



## **EXPONA.CO" WAS AMONG THE 12 INITIATIVES SUPPORTED IN CORONATHON TURKEY COMPETITION.**

Founded by Computer Science and Engineering and Management Sciences Double Major 2019 graduate A. Atakan Demir and friends, Expona.co is an online platform that offers the opportunity to experience various workshops.





**MUSA SADIK ÜNAL WON FIRST PLACE IN TURKEY IN TÜBİTAK 2242 RESEARCH PROJECTS COMPETITION**

Musa Sadık Ünal, a student at the Computer Engineering Program, the Faculty of Engineering and Natural Sciences, Sabancı University, won the first place in the education category of TÜBİTAK 2242 Research Projects Competition for University Students with his project titled “PIC-TALK: Developing Open Source Hardware Prototype for Education of The Visually Impaired and Creating An Integrated Digital Platform”.



**BATIN MERT KARAHASANOĞLU RECEIVED THE IEEE MTT-S AND FULBRIGHT MASTER’S SCHOLARSHIPS.**

Batın Mert Karahasanoğlu, a student at the Electronics Engineering Program, the Faculty of Engineering and Natural Sciences, Sabancı University has been awarded IEEE MTT-S Undergraduate/Pre-graduate Scholarship by the IEEE Microwave Theory and Techniques Society with his “Phase Shifter” project, which is one of the lower blocks of the 5G circuit that he designed. Karahasanoğlu, who has a double major in Mechatronics Engineering Program, has also been awarded a Fulbright Master’s Scholarship.

# Our Awards

## GÜRSEL SÖNMEZ AWARDS



The "Gürsel Sönmez Awards" established in 2006 in memory of the Faculty of Engineering and Natural Sciences member and valued scientist Gürsel Sönmez were given for the 14th time this year. To commemorate his achievements and to inspire and encourage young scientists, an award is presented each year to selected graduate students of FENS who write distinguished MS or PhD theses. The selection process is pursued at the end of each academic year, by the Gürsel Sönmez Award Committee formed by faculty members representing each program.

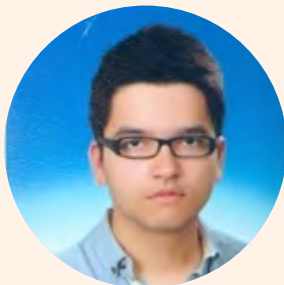
Dr. Gürsel Sönmez Research Award Committee has carefully evaluated the applications of 9 candidates, considering their research outcomes and references, as well as the nature of each discipline at the Faculty of Engineering and Natural Sciences at Sabancı University.

Due to their achievements and contributions in their fields as summarized in our website the Committee has decided to give the award to one graduate student.

**Merve Keskin Özel**, Industrial Engineering PhD Program, is a graduate candidate of 2019-2020 Academic year Spring semester.

The award has been presented to Merve Keskin Özel at the Graduation Ceremony on 20nd of June, 2020. We congratulate her and we wish her continued success.

Merve Keskin Özel's PhD thesis addresses several variants of the Electric Vehicle Routing Problem (EVRP). She focuses on the related route optimization of EV's that has become more challenging due to the need for recharging the EVs during their delivery/pickup operations.



## SAKIP SABANCI AWARD FOR THE HIGHEST RANKING UNDERGRADUATE STUDENT

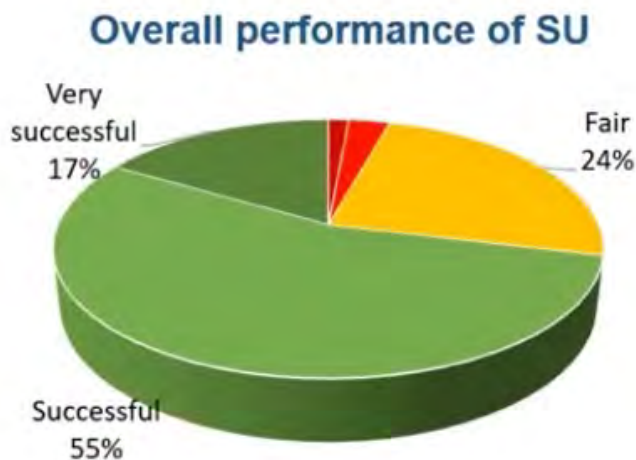
Winner is Osman **Berke Güney** who graduated from the Electronics Engineering Program.

# FENS faculty meet the moment – flexibility and academics in the Covid-19 era

## Teaching

Our faculty members have started to use online teaching platforms such as Zoom and Moodle successfully, since the Spring Term of the Academic Year 2019-2020. Surveys conducted by the Center for Individual and Academic Development (CIAD) regularly since the pandemic measured general satisfaction about online teaching at SU and evaluated different aspects of online teaching. In Spring 2020, more than 70% of the students indicated that they found online education as “successful” or “very successful” (Fig. 1).

In Summer 2020, the technological infrastructure of several classrooms has been updated and 9 new classrooms and 2 recording studios have been built at the Altunizade Campus, to facilitate online learning. In Fall 2021, satisfaction around online education was around 75% (Fig. 2). Regarding different aspects of online education, students gave high ratings to the following actions facilitated by our University: (i) extending synchronous learning with recorded lectures in a blended lecture format, to allow for more flexible learning<sup>1</sup>; (ii) remote access to the relevant facilities of the University, such as databases, online library resources, and technology; (iii) online opportunities provided to meet and discuss with other students; and (iv) online support for personal learning from faculty members and by CIAD advisors; online career counseling and access to health/mental health professionals.



## Research and Development

Our faculty members have also contributed to Covid-19 basic research and technological applications to assist health-care professionals. Two examples which found immediate applications in the field are the following:



**Ogün Adebali** and his co-workers have generated the mutation profile of SARS-CoV-2 genomes (<http://dx.doi.org/10.3390/v13030394>) by delineating the contribution of mutagenesis and selection to the genome diversity of half a million SARS-CoV-2 isolates. Adebali lab (<https://adebalilab.org/>) has also released a web application to track the global and interprovincial virus spread of the isolates from Turkey in comparison to thousands of genomes worldwide

(<http://dx.doi.org/10.3906/biy-2005-35>).



**Berrin Yanıkoğlu** and her students, together with researchers from Istanbul University Cerrahpaşa School of Medicine have developed an AI system for hospitals, to speed up detection of Covid-19 infections in tomography scans (<https://arxiv.org/abs/2105.08506>). While waiting for the radiological assessment of patients, tomography results are evaluated by the developed system, to prioritize the evaluation of the patients by radiologists, to decrease infection rates in hospitals. The methodology has been integrated to the Cerrahpaşa Medical School Hospital's system, proving to be extremely effective with an accuracy of 95%.

# Emeritus Appointment

## Honoring the Founding Faculty Members for their Distinguished Service



Two of the founding faculty members of FENS, Ali Alpar, as of February 1st, 2019 and Alev Topuzoğlu, as of July 1st 2018, has been awarded the 'Emeritus Faculty Member' title by Sabanci University Board of Trustees.

Sabancı University Emeritus Faculty Membership Ceremony took place at SU Performing Arts Center on May 21, 2019, with the participation of Güler Sabancı, Founding Chair of the Board of Trustees and many other distinguished guests.

At the ceremony, three other faculty members, Erdağ Aksel and Ersin Kalaycıoğlu from Faculty of Arts and Social Sciences and Nakiye Boyacıgiller from Sabancı Business School have also been awarded the Emeritus title besides Alev Topuzoğlu and Ali Alpar.

The opening speeches of the ceremony were made by Güler Sabancı and President Yusuf Leblebici.

In her speech, Güler Sabancı underlined that the faculty members who received the title of Emeritus have made valuable contributions since the establishment of Sabancı University, which is in its 20th year. She said that they set out 20 years ago with the desire and belief to make a difference in higher education and to "become a world university". She thanked them for generously transferring their knowledge and experience to the University of the Future and for what they did for the future of Sabancı University.

President Yusuf Leblebici stated in his speech that the faculty members who received the title of Emeritus have been working together since the first days of Sabancı University. Leblebici said, "I would like to thank our friends for bringing us this institution and this warm family atmosphere, for bringing us with their ideas, contributions, efforts, and perspiration".



### Alev Topuzoglu

Professor Topuzoglu has been working at Sabancı University since the very first days. In addition to her contributions to the conceptual design of the university in general, she had an active role in creation of the one of a kind programs of SU such as CIP, BAGEM, Academic Support Program and Foundations Development Program. She was also a member of the group that prepared the Statement of Academic Freedom of Sabancı University, a foundational text for the university philosophy and general principles. Long time coordinator of the Mathematics program, her mentoring of young academics and mathematicians made a huge contribution to the development and continuation of the field. Her active involvement in the Gender initiatives and her focus on increasing female participation in STEM was just one aspect of her varied distinguished service to the academy and society at large.

In the ceremony, she said “The beauties of being an academic at Sabancı University are enjoyed by very few people. Those days we lived in Karaköy during the foundation days, we thought about every detail for hours, sometimes days, sometimes weeks, we struggled, discussed and finally decided, prepared the course schedules, decided on the contents of the lessons, the experience we had there was given to very few people, it is a great one. It was privilege”.



### Ali Alpar

Professor Ali Alpar has made countless contributions to Sabancı University and FENS. He is the founder of the Physics Program and was the longtime Director of the Foundations Development Program. He had an immense role in the design and development of the STEM education at SU. Our signature courses NS 101, NS 102, NS 213 and NS 214 that were designed by Professor Alpar have been hugely successful models that have been taken as an example by other higher education institutions worldwide. His leadership in the astrophysics community in Turkey paved way for many young academics to enter the field. His efforts in making science accessible to society and his lifelong work in promoting an upholding the principles of scientific merit have been distinguished service to the academy and we will always be indebted for it.

In the ceremony, Ali Alpar emphasized that Sabancı University is based on the principle of academic freedom. Alpar said, “Like every freedom, academic freedom brings a responsibility. It is a responsibility of scientists to make the information they produce authentic and rely on evidence”. Alpar added that it is extremely important for universities to support freedom of expression and academic freedoms and provide space for them.

Both Alev Topuzoglu and Ali Alpar will continue to be part of our community and FENS is lucky to still benefit from their active role in furthering our mission of continued scientific excellence.

## FACULTY of ENGINEERING and NATURAL SCIENCES CONNECTIONS

→ Learn about FENS: [fens.sabanciuniv.edu](https://fens.sabanciuniv.edu)

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✉ Sabancı University

Orta Mahalle

Üniversite Caddesi No: 27

Orhanlı -Tuzla, 34956 İstanbul

☎ +90 216 4839600