

# FACULTY OF ENGINEERING SCIENCES





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# THE FACULTY OF ENGINEERING SCIENCES AT BEN-GURION UNIVERSITY OF THE NEGEV



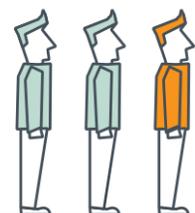
Since 1967, the [Faculty of Engineering Sciences](#) has educated leaders in all areas of technology, while establishing a challenging and stimulating intellectual environment, drawing first-rate researchers and students and contributing to industrial innovations in Israel and the Negev. More than 20,000 engineers and researchers have graduated from the Faculty and developed careers in science, industry, and government, influencing the development of technology and society at large.

The Faculty's ethos is highly collaborative, and many of our researchers are engaged with colleagues, both in Israel and abroad, in interdisciplinary projects. Programs in new technologies, such as renewable energies, cyber security, software engineering, big data, nanotechnology, robotics, and electro-optics in particular, have generated academic programs, interdisciplinary centers, and research laboratories whose work extends beyond traditional departmental boundaries.

We aim to provide a rigorous, challenging, and inspiring education at the highest international standards of excellence. Our goal is to develop, through a synergy of innovative teaching and research, a cadre of technological leaders capable of solving the problems facing contemporary society by means of comprehensive and exact scientific inquiry, without losing sight of the implications of technology on human beings. Our overriding mission, as scientists and citizens, is to generate and advance the frontiers of knowledge in technology, and to use that knowledge for the benefit of humanity.



# FAST FACTS

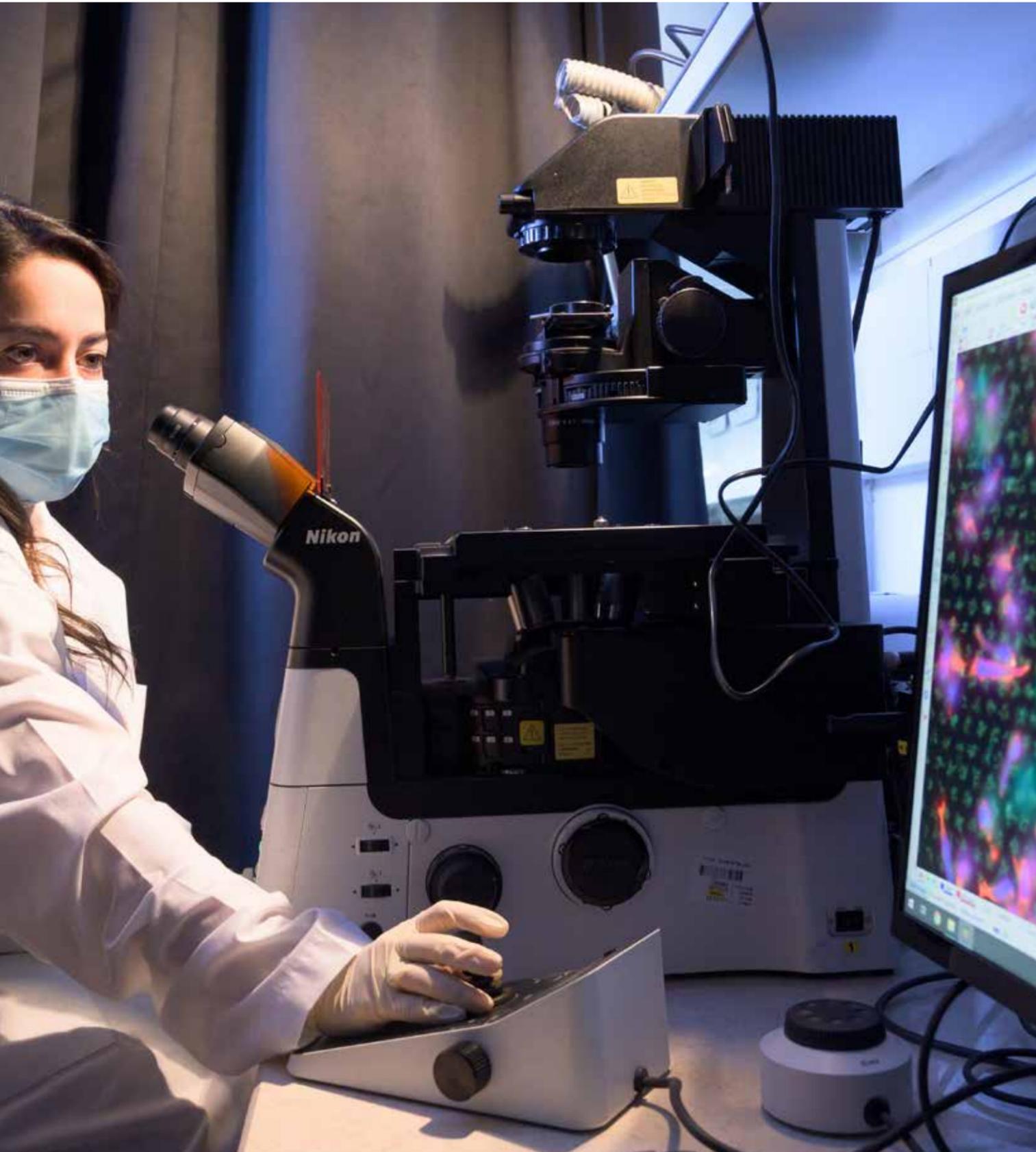


1 in 3 of all Israeli engineers graduate from Ben-Gurion University of the Negev.



Over 500 final projects are presented at the annual engineering students showcase, reflecting work in all departments.

Cyber@BGU is an umbrella organization at for a range of cyber security, big data analytics and AI applied research activities at Ben-Gurion University. Located in a state-of-the-art R&D center at the University's Advanced Technologies Park in Beer Sheva (Israel's Cyber Capital), Cyber@BGU serves as a platform for the most innovative and technologically challenging projects with various industrial and governmental partners.



# FACULTY OF ENGINEERING SCIENCES DEGREE PROGRAMS

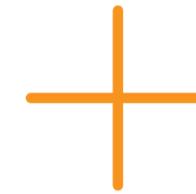
## UNDERGRADUATE DEGREE PROGRAMS

Biomedical Engineering  
 Biotechnology Engineering  
 Chemical Engineering  
 Communication Systems Engineering  
 Computer Engineering  
 Data Science and Engineering  
 Electrical & Electronics Engineering  
 Electrical and Computer Engineering  
 Industrial Engineering & Management  
 Information Systems Engineering  
 Materials Engineering  
 Mechanical Engineering  
 Nuclear Engineering  
 Production Management  
 Software Engineering (in collaboration with the  
 Dept. of Computer Science)  
 Structural Engineering

## BSc DEGREE PROGRAMS

### BSc dual DEGREE PROGRAMS

Chemical Engineering and Chemistry (Nanotechnology)  
 Electrical & Computer Engineering and Physics  
 Electrical & Computer Engineering and Mathematics  
 Electrical & Computer Engineering and Computer Science  
 Electrical & Computer Engineering and Mechanical  
 Engineering  
 Industrial Engineering & Management and Mathematics  
 Materials Engineering and Physics  
 Mechanical Engineering and Materials Engineering  
 Mechanical Engineering and Physics  
 Mechanical Engineering and Mathematics  
 Structural Engineering and Geology  
 Joint MD and BSc in Biomedical Engineering



## GRADUATE DEGREE PROGRAMS

Biomedical Engineering (MSc and PhD)  
 Biotechnology Engineering (MSc and PhD)  
 Chemical Engineering (MSc and PhD)  
 Communication Systems Engineering (MSc and PhD)  
 Cyber Space Security (with the Dept. of Computer  
 Science) (MSc)  
 Electrical & Computer Engineering (MSc and PhD)  
 Electro-Optical and Photonics Engineering (MSc and PhD)  
 Energy Engineering (MSc)  
 Environmental Engineering (MSc and PhD)  
 Industrial Engineering & Management (MSc and PhD)  
 Information Systems Engineering (MSc and PhD)  
 Materials Engineering (MSc and PhD)  
 Machine learning and big data analytics (MSc)  
 Mechanical Engineering (MSc and PhD)  
 Mechatronics Engineering (MSc)  
 Nuclear Engineering (MSc and PhD)  
 Safety Engineering and Management (MSc)  
 Structural Engineering (MSc and PhD)  
 Systems Engineering (MSc)

# SCHOOL OF ELECTRICAL & COMPUTER ENGINEERING



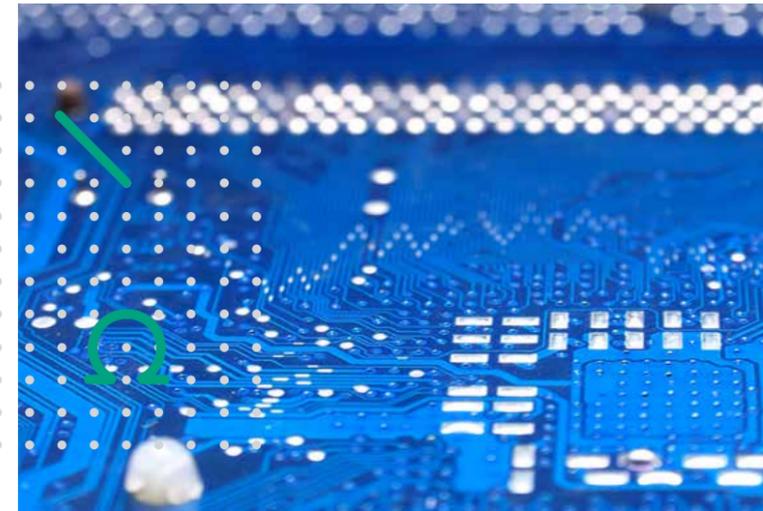
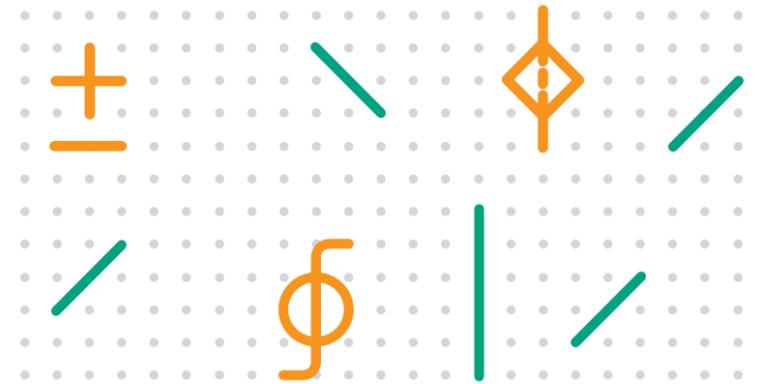
The School of Electrical and Computer Engineering was established in 2019 by uniting three existing departments and now offers three undergraduate programs and three graduate programs. The School consists of (1) the Department of Electrical and Computer Engineering, (2) the Department of Communication Systems Engineering, and (3) the Unit of Electro-Optical and Photonics Engineering. The School serves as an arena for cross-fertilization between the three disciplines, and the study programs being offered within the School are closely entwined, allowing for significant modularity and diversity in research areas, as well as flexibility and a wide range of undergraduate and graduate courses. The School currently has 52 senior faculty members, more than 1,100 undergraduate students and over 250 graduate students.

Alumni of the School's departments can be found worldwide in leading academic and engineering positions. The school as a whole has emerged as a world-renowned research center and an active leader in the hi-tech industry in Israel and in the Negev region in particular.

ALUMNI OF THE SCHOOL'S DEPARTMENTS CAN BE FOUND WORLDWIDE IN LEADING ACADEMIC AND ENGINEERING POSITIONS

## SCHOOL OF ELECTRICAL & COMPUTER ENGINEERING

# DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING



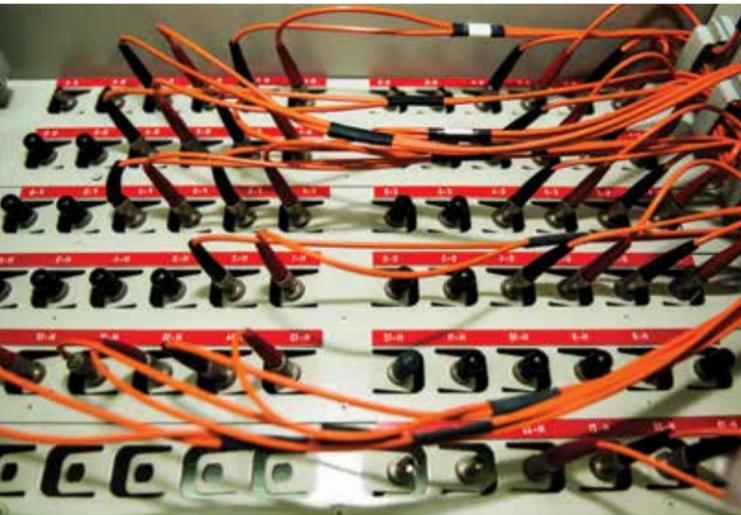
The Department of Electrical and Computer Engineering was established in 1971. Research areas encompass a broad range of practical and theoretical aspects of electrical and computer engineering, including communication theory; computer engineering; control and robotics; detection and estimation theory; electromagnetism and wave propagation; electronic circuits and instrumentation; electronic devices; optics and electro-optics; power systems; signal processing; and stochastic processes and estimation; VLSI and nanotechnology; biomedical engineering; and secured systems.

ELECTRICAL & ELECTRONICS ENGINEERING  
**BSc Degree**

COMPUTER ENGINEERING  
**BSc Degree**

ELECTRICAL & COMPUTER ENGINEERING  
**MSc & PhD Degree**

# DEPARTMENT OF COMMUNICATION SYSTEMS ENGINEERING

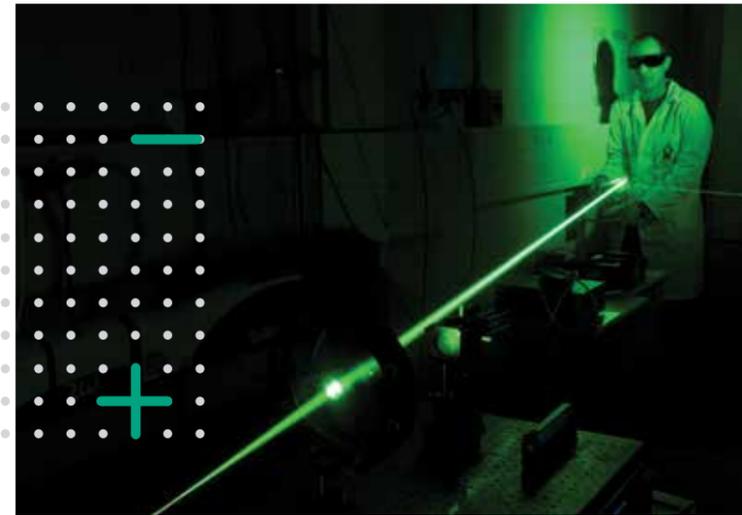


**The Department of Communication Systems Engineering** (established in 1997): Research areas include network architectures and protocols; the Internet of Things; cloud computing; network security; network multimedia systems (video and voice); wireless communication; social networks; information theory; machine learning; big data; and distributed computing.

The Department's graduates master the ability to characterize, analyze, and design complete, full-scale communication systems, including hardware elements (designing the computers, interfaces, and logic circuits); software elements (system analysis, design, and programming); and to manage, analyze, and design public and organizational communication systems.

COMMUNICATION SYSTEMS ENGINEERING  
**BSc Degree**  
**MSc Degree**  
**PhD Degree**

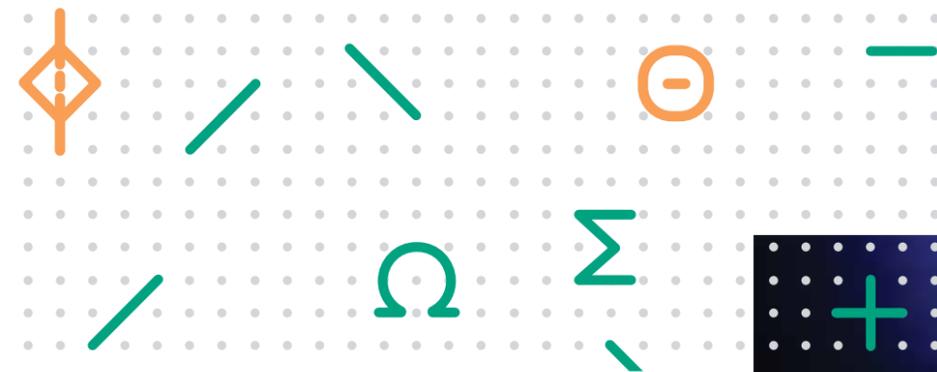
# PHOTONICS AND ELECTRO-OPTICS ENGINEERING



**Photonics And Electro-Optics Engineering** (established in 2000): Research areas include cutting-edge research in the areas of remote sensing; atmospheric optics; fiber-optic biosensors; nano-plasmonics; integrated nano-photonics; super-resolution microscopy; image processing; vision display systems; 3D imaging and display; hyperspectral imaging; computational optical sensing and imaging; biomedical optics; liquid crystal devices for sensing and imaging; THz and mmW imaging; optical glass/fibers; opto-electronic devices; photovoltaics, and more. The Unit's multidisciplinary research places it at the vanguard of the optics and photonics community, both nationally and internationally.

ELECTRO-OPTICAL ENGINEERING  
**MSc Degree**  
**PhD Degree**

# DEPARTMENT OF BIOMEDICAL ENGINEERING



Biomedical Engineering applies technological advances in the service of biology and medicine. We integrate physical, mathematical, and computational sciences with the disciplines of electrical, mechanical, and chemical engineering in order to study physiology, disease, behavior, and health. Many applications involve either diagnosis and testing, or actual medical treatment. Thus, a successful biomedical engineer adopts a multidisciplinary approach to problems.

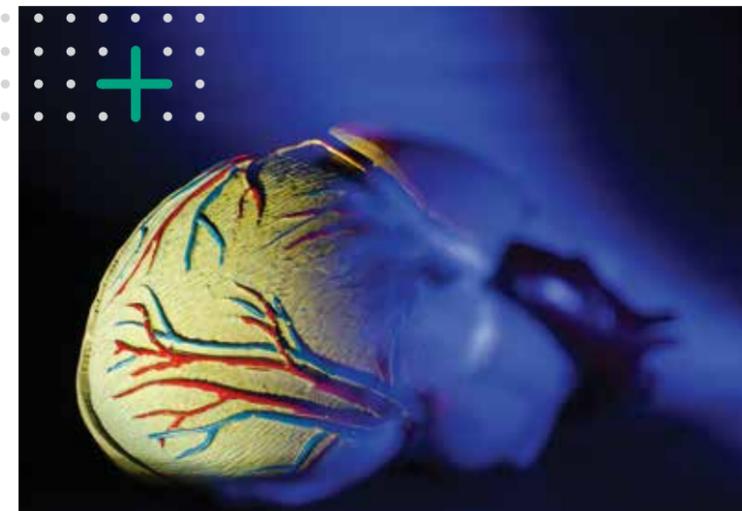
The Department of Biomedical Engineering at BGU was established in 2002 and currently has eight faculty members, who are extensively involved in collaborative research projects with colleagues in the Faculties of Engineering and Health Sciences.

Department faculty conduct research in physiological signal processing; computational motor control; medical robotics and remote surgery; biomedical optics; biomechanics of soft tissues; neurophysiological and behavioral aspects of learning; micro-fluidics in medicine and in the human body; nano-bioelectronics; the interfacing of biology with micro-electronics; models of biological membranes; biopharmaceutics; and computational models of the interaction between radiation fields and biological tissue.

BIOMEDICAL ENGINEERING

- BSc Degree
- MSc Degree
- PhD Degree

# THE AVRAM AND STELLA GOLDSTEIN-GOREN DEPARTMENT OF BIOTECHNOLOGY ENGINEERING



A driving force in the future world economy, biotechnology is a multidisciplinary field that allies the life sciences with various disciplines of engineering to create a plethora of essential materials and devices for human society. The Avram and Stella Goldstein-Goren Department of Biotechnology Engineering, was founded in 2000 and has since strived to become a world leader through important contributions to the field.

Research at the Department covers a wide range of topics focusing on “hi-tech” areas of biotechnology, such as tissue engineering, biosensors, biochips, nano-biotechnology, genetic engineering, drug discovery, wastewater remediation, and biomaterials, as well as on more traditional biotechnological processes of bioreactor cultivation and separation. Despite a strong emphasis on applicability, the researchers also make significant contributions to basic research.

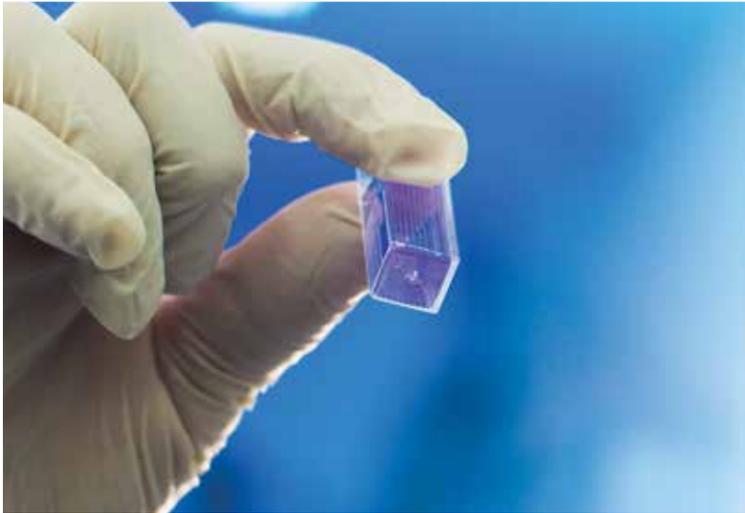
Our graduates have found employment in post-doctoral and faculty positions at prestigious universities, as well as significant positions at large pharmaceutical companies and start-ups. They are found in R&D, business, and legal areas of biotechnology, as well as becoming entrepreneurs themselves. Our faculty members have licensed intellectual property, as well as spun-off innovations in various start-up ventures.

BIOTECHNOLOGY ENGINEERING

- BSc Degree
- MSc Degree
- PhD Degree



# DEPARTMENT OF CHEMICAL ENGINEERING



CHEMICAL ENGINEERING

**BSc Degree**

SPECIALIZATIONS:  
BIOTECHNOLOGY

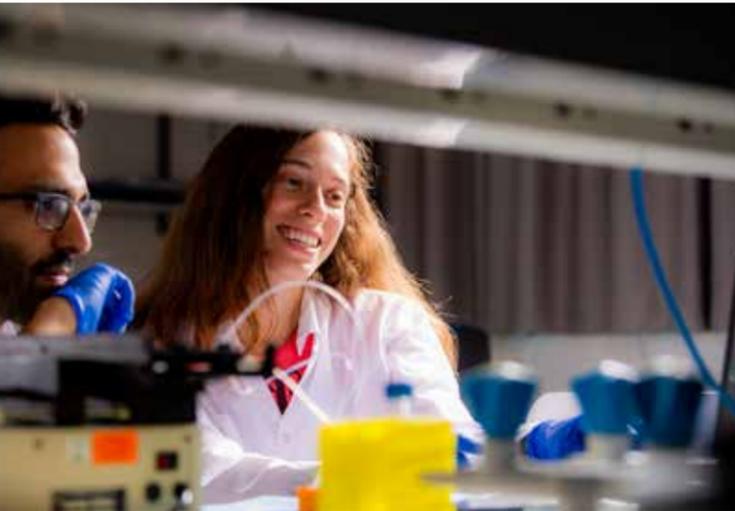
**MSc Degree**

**PhD Degree**

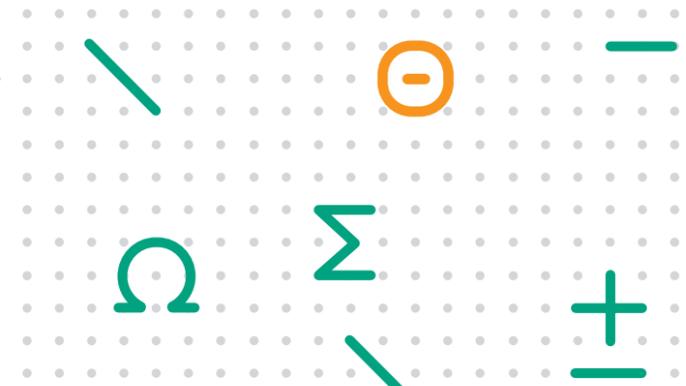
The Department of Chemical Engineering was established in 1966 and currently has 10 senior faculty members. Our mission is to educate the next generation of chemical engineers and carry out high quality academic research. We aim to provide our students with knowledge and skills that will enable them to take part in a multidisciplinary and complex world.

Faculty members, together with their graduate students and research staff, conduct experimental and theoretical research at the forefront of a variety of advanced chemical engineering fields, embracing and expanding the boundaries of new science and technology, while advancing both research and education. Primary areas of research at the Department include advanced catalytic materials; renewable energy; biotechnology and biophysics; soft materials and nanotechnology; polymers and interfaces; biomaterials; drug delivery; gene therapy; and water treatment. Our faculty is also active in many of BGU's interdisciplinary research centers and programs.

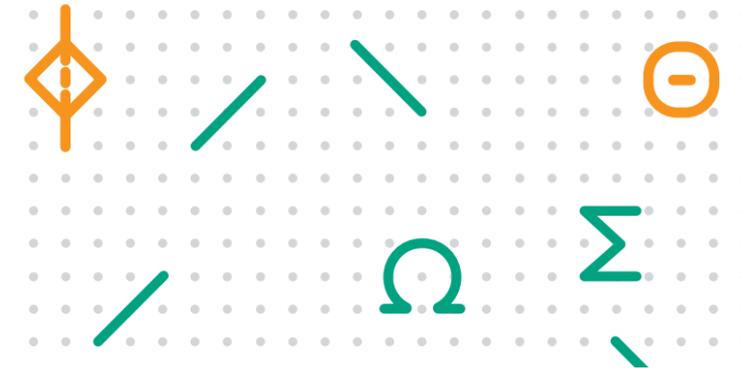
# DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING



The Department of Civil and Environmental Engineering was established in 2021 through the merging of the Dept. of Structural Engineering, the Unit of Safety Engineering and the Unit of Environment Engineering.



# DEPARTMENT OF STRUCTURAL ENGINEERING



**Structural Engineering** is one of the oldest branches of engineering. In recent years, it has undergone significant transformations in response to a new awareness of extreme events, both natural and manmade, such as earthquakes and explosions, as well as a leap in the analytical and numerical capacities of modern computers, developments in information technologies, and advances in new building materials and technologies.

Since its establishment in 2002, the Department of Structural Engineering has experienced a rapid expansion of its undergraduate program and graduate program (since 2016) and currently has 15 senior academic, technical, and administrative staff.

The Department's faculty members conduct research in a range of areas, including seismic design of structures; Finite Element methods; development of advanced protective systems and technologies for structures and critical infrastructures, geotechnical engineering computational structural analysis methods; maritime landslides; advanced cement materials reinforced with meshes; construction engineering and management; and facilities management.

## STRUCTURAL ENGINEERING

- BSc Degree
- MSc Degree
- PhD Degree

# ENVIRONMENTAL ENGINEERING

ENVIRONMENTAL ENGINEERING  
MSc Degree  
PhD Degree



Environmental Engineering is defined as the development, use, and regulation of natural or engineered systems for the remediation of contaminated environments (water, air, soil) and for environment-friendly processes and sustainable development.

The Unit of Environmental Engineering offers MSc and PhD degrees, with the goal of training engineers and environmental scientists and equipping them with broad Interdisciplinary knowledge in order to solve complex problems of environmental pollution.

A central part of the Environmental Engineering Program is water technology. Graduates will be able to design and implement solutions to issues such as the efficient use of water; treatment processes for water and wastewater; treatment of solid waste and hazardous materials; bioremediation of contaminated soil and groundwater, air pollution modeling and control, and more.

# MANAGEMENT & SAFETY ENGINEERING



MANAGEMENT & SAFETY ENGINEERING  
MSc Degree

Safety is an increasingly central area in industrial management and operations, in systems and project design, and in the overall activities of organizations in Israel and abroad. At the same time, oversight in various areas of safety and enforcement of the Work Safety Ordinance are also expanding. The level of sophistication necessary to manage safety systems in today's advanced industries requires the training of managers and engineers who are specialists in these diverse areas of safety. They must combine engineering with science, management, and health. The projection is for this field to become increasingly prominent globally through its employment of mathematical and physical aspects.

Management & Safety Engineering aims to respond to this need by preparing its graduates for positions in both engineering and management in the field of safety, through a graduate program which grants MSc and PhD degrees in Safety Engineering and Management.

# DEPARTMENT OF INDUSTRIAL ENGINEERING AND MANAGEMENT



The Department of Industrial Engineering and Management, established in 1969, is the largest such department in Israel, with 33 faculty members, 1,000 active students, and 200 graduates each year. The Department aims to lead with cutting-edge applied and theoretical research and to serve the community in the various domains that constitute the field of industrial engineering and management.

The world-class education offered in the Department enables graduates to assume professional and management positions in a variety of industries. For master's and PhD students, the Department offers 6 research tracks in leading domains: data science, statistics and quantitative methods, human factors, intelligent systems, information systems, and production and operations research. Additionally, three different research groups specialize in operational research, algorithms, and production management.

Our 17 state-of-the-art research laboratories in integrated manufacturing, biomechanics and tele-robotics, machine learning and business intelligence, human-machine interaction, intelligent systems, and more, support our commitment to high-quality education and allow our researchers to lead inter- and multi-disciplinary studies that drive innovation in their fields.

## INDUSTRIAL ENGINEERING & MANAGEMENT

### BSc Degree

SPECIALIZATIONS:  
INFORMATION SYSTEMS  
PRODUCTION MANAGEMENT

### MSc Degree

SPECIALIZATIONS:  
INDUSTRIAL ENGINEERING | INDUSTRIAL  
MANAGEMENT | ECONOMICS MANAGEMENT  
| HEALTH MANAGEMENT | BUSINESS  
ADMINISTRATION | INFORMATION SYSTEMS

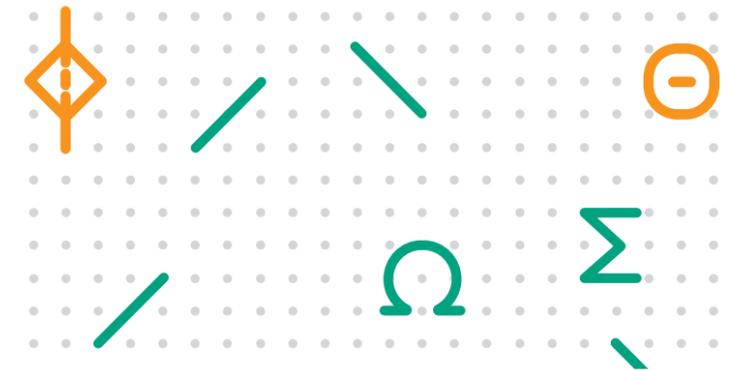
### MSc & PhD Degree

SPECIALIZATIONS: DATA SCIENCE

# DEPARTMENT OF MATERIALS ENGINEERING

The Department of Materials Engineering was established in 1971 and has 12 senior faculty members. Our graduates occupy leading positions in industry, government, and research laboratories throughout Israel.

The mission of the Department is to provide high quality education in materials science and engineering and to carry out fundamental and applied research in new areas of the field, as well as in advanced ceramics, thermoelectrics, mechanical properties, and the theory of materials. The Department's dynamic research activity is supported through national and international collaborations and funding agencies.



## MATERIALS ENGINEERING

### BSc Degree

### MSc Degree

### PhD Degree

Materials research is at the center of contemporary scientific and technological developments. New materials are a source of innovation in industry, medicine, and environmental solutions. The advent of nanotechnology, structured materials, and biomaterials, coupled with enhanced theoretical understanding and computational capabilities, is driving a worldwide revolution in materials science and engineering.

# DEPARTMENT OF MECHANICAL ENGINEERING



The Department of Mechanical Engineering was among the first departments established at BGU, with the first class graduating in 1970. The Department currently consists of 25 full-time faculty members in all major fields of mechanical engineering sciences.

The aim of the Department of Mechanical Engineering is to promote the practice of mechanical engineering and mechanical engineering sciences in the broadest sense. We do so first and foremost by training engineers in our BSc program. Naturally, we envision our graduates as leaders in the various activities performed by mechanical engineers: research, development, design, manufacturing, maintenance, and management. To achieve this, our graduates should be innovative, creative, bright, knowledgeable, and hardworking. In addition, they should possess communication skills, the ability to collaborate with colleagues and lead, and the ability to work in a multidisciplinary environment. Many of our graduates now occupy leading positions in industry, academia, and government research institutes.

MECHANICAL ENGINEERING

- BSc Degree
- MSc Degree
- PhD Degree

The Department of Mechanical Engineering

# ENERGY ENGINEERING

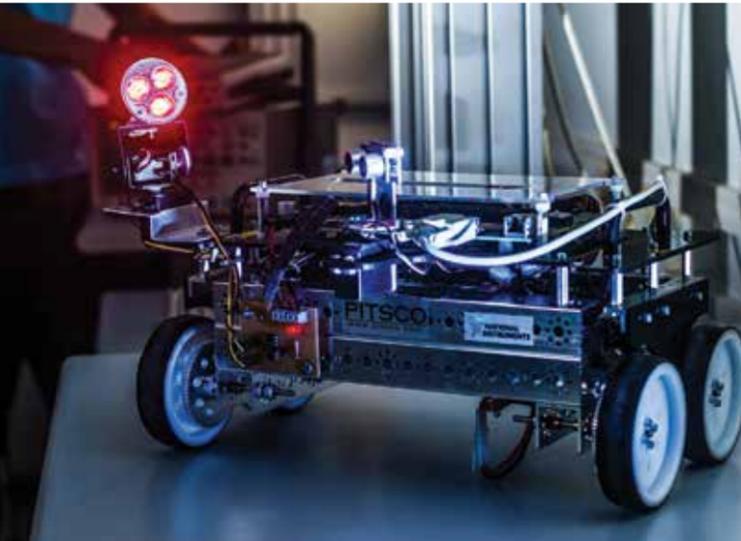


The Unit of Energy Engineering and its approximately 20 affiliated faculty members offer an interdisciplinary graduate program awarding MSc degree in Energy Engineering. Research at the Unit focuses on the development of innovative methods in renewable energies (such as solar, thermo-electrics, bio-fuels, and wind) with enhanced efficiencies, as well as energy (including heat, electricity, and hydrogen) storage methods. We also work on conventional energy sources, such as gas, fuel, and nuclear, and on the energy economy.

In each of these activities, particular attention is paid to enhancing efficiencies with low operation costs and minimal CO<sub>2</sub> emissions, while at the same time, focusing on the entire supply chain, ranging from basic science to practical applications. These applications include “green” buildings, hybrid photovoltaic-thermoelectric devices, and the utilization of waste heat developed in automotive engines and its transformation into useful electricity.

ENERGY ENGINEERING  
MSc Degree

# MECHATRONICS ENGINEERING



The Unit of Mechatronics Engineering was created in order to meet the growing technological need for the integration of various engineering disciplines and, in particular, those of electrical engineering, mechanical engineering, and computer science. This integration is essential for the design and manufacture of modern automatic machines that often require a blend of electrical and mechanical elements in the form of embedded computers (microcontrollers), such as autonomous robots, autonomous guided vehicles, drones, and automatic manufacturing systems.

The Unit of Mechatronics Engineering offers a unique interdisciplinary MSc program that combines courses from several departments (primarily from Mechanical, Electrical, and Industrial Engineering and Management). The goal is to provide graduates with the tools to solve complex multidisciplinary engineering problems. Particular emphasis is placed on the acquisition of skills necessary for the dynamic analysis of mechanical systems, as a basis for the development and implementation of complex control algorithms. The areas of research study at the Unit include control systems; robotics and control of robotic systems; control and guidance of autonomous vehicles; control of electric actuators, and more.

MECHATRONICS ENGINEERING  
MSc Degree

# SYSTEMS ENGINEERING PROGRAM



The role of Systems Engineering varies considerably from sector to sector such as aerospace, mechanical industry, plant engineering and automation technology.

The Systems Engineering Program has a unique multidisciplinary curriculum. The program is aimed primarily at outstanding engineers who wish to advance in systems engineering to build integrative disciplines and train them for engineering and technological systems, leadership that we believe will be a key prerequisite for success in their roles. The program exposes students to fascinating prospects for tomorrow's products and services, and expands their knowledge without duplication the subjects they studied for their undergraduate degree.

The goals of the program are to provide theoretical and practical knowledge in the field of systems engineering. This knowledge include: systems thinking, requirements management, management of disciplines and different systems integration processes, team tools and management, and an integrated multidisciplinary approach. The program also strives to provide tools for entrepreneurship and excellence in project management.

SYSTEMS ENGINEERING  
MSc Degree

# DEPARTMENT OF SOFTWARE AND INFORMATION SYSTEMS ENGINEERING



The Department of Software and Information Systems Engineering aims to provide practitioners and researchers with a strong computational and practical background to design, build, and evaluate information systems. We train our students to develop information systems and to solve real-life problems using computational and engineering methods.

The Department, established in 2000, is the largest information systems department in Israel, with 24 senior faculty members. The Department's faculty members conduct research in the fields of data science, including big-data analytics; artificial intelligence, including natural language processing; automated medical diagnosis and therapy; automatic software testing; and intelligent e-commerce agents, all of which are increasingly important to information systems engineering. They are also deeply involved in cyber security research, covering topics such as network security methods for identifying attacks, cryptography, and secure systems development.

The Department of Software and Information Systems Engineering is a prominent leader in data science education in Israel. It was the first department in Israel to offer an MSc degree in Data Science and is now offering a new BSc. in Data Science and Engineering that aimed at meeting the growing industry demands of the industry for data scientists and data engineers. The program is supported by 20 faculty members who carry out groundbreaking research in core areas of data science, including machine learning, data analytics, and artificial intelligence. Graduates of the program are prepared to develop methods for data analysis, prediction, classification, anomaly detection and pattern recognition in various domains such as entertainment, commerce, security, and healthcare.

## INFORMATION SYSTEMS ENGINEERING

### BSc Degree

SPECIALIZATIONS:  
DATA SCIENCE AND ENGINEERING

### MSc Degree

SPECIALIZATIONS:  
CYBER SPACE SECURITY  
MACHINE LEARNING AND BIG DATA ANALYTICS

### PhD Degree

## SOFTWARE ENGINEERING PROGRAM

### SOFTWARE ENGINEERING BSc Degree



Offered jointly by the Faculty of Engineering Sciences and the Faculty of Natural Sciences, the **Software Engineering Program** was established in 2000 in response to the swiftly evolving needs of the software industry. The Program aims to train leaders who will thrive in the fast-paced world of software engineering by cultivating professionals with a mastery of both system engineering and algorithm design, capable of coping with the ever-increasing complexity of software systems.

The Program combines rigorous scientific education, state-of-the-art methods for developing large-scale software systems, and practical experience in developing complex software applications. Students benefit from the wide range of expertise in the Departments of Computer Science and of Software and Information Systems Engineering, including programming languages; algorithms; distributed systems; autonomous systems; verification; software modeling; development processes; project management; security, and much more. Graduates of the Program have gone on to become successful software engineers in the vibrant Israeli hi-tech industry, as well as in leading international companies, such as Google, Microsoft, IBM, CheckPoint, Apple, and Facebook.

# UNIT OF NUCLEAR ENGINEERING



The Unit of Nuclear Engineering, established in 1970, is the only academic department in Israel focused on nuclear engineering. Its academic staff includes four senior faculty members.

Research at The Nuclear Engineering Unit includes: Radiation detection and dosimetry developments, which are based on state-of-the-art research laboratories equipment; and powerful computation stations to assist radiation and reactor simulation codes developments.

The Unit of Nuclear Engineering is the only academic department in Israel which educates, trains, and qualifies scientists and engineers in vital research fields such as nuclear energy, nuclear medicine, and radiation applications in industry and research. The unit offers advanced studies in these research areas and grants MSc and PhD degrees. The curriculum provides an interdisciplinary education in nuclear engineering, nuclear power and radiation engineering, which are essential in today's advanced technologies.

NUCLEARENGINEERING

MSc Degree

PhD Degree

# CYBER@BGU



Israel leads the world in the development of online security systems and know-how and BGU is at the forefront of this battle. Cyber@BGU is the umbrella organization for the broad range of collaborative cyber security, big data analytics and AI applied research activities taking place at BGU, primarily in engineering departments, in collaboration with partners from industry. Located at the Advanced Technologies Park adjacent to the University's campus in Beer-Sheva, Cyber@BGU serves as a platform for the most innovative and technologically challenging projects with various industrial and governmental partners.

The initiative is home to more than 160 highly skilled researchers, students and technical staff and encompasses, among others, the Cyber Security Research Center, a joint initiative with the Israel National Cyber Bureau, the Telekom Innovation Labs in partnership with Deutsche Telekom, the Center for Computational Criminology in partnership with the Israel Police and dozens of additional R&D collaborations with leading companies.



# INTERDISCIPLINARY RESEARCH AT THE FACULTY OF ENGINEERING SCIENCES



In keeping with our commitment to work across disciplinary boundaries and reach out to industry, many Faculty of Engineering researchers are members of faculty-wide, university-wide, and inter-university research institutes and initiatives.



## NATIONAL INSTITUTE FOR BIOTECHNOLOGY IN THE NEGEV

The National Institute for Biotechnology in the Negev (NIBN) was created in 2001 to support the development of biotechnology industries in Israel. Hosted within BGU, the NIBN is a self-organized, independent non-profit research body, organized along unique guidelines designed to encourage its members to cross traditional academic barriers and engage together in creative and groundbreaking biotechnological research. The NIBN currently includes six multidisciplinary research groups working on cancer research; human genetics disorders; infectious diseases; autoimmune and metabolic diseases; neurodegenerative diseases; and applied biotechnology.

## ILSE KATZ INSTITUTE FOR NANOSCALE SCIENCE AND TECHNOLOGY

The Ilse Katz Institute for Nanoscale Science and Technology (IKI) was founded in 2006 under the Israeli National Nanotechnology Initiative, aimed at creating a research infrastructure that will serve as the basis for nano-industries in Israel. The IKI brings a community of scientists conducting research in fields related to the understanding and manipulation of matter at reduced dimensionality under one roof. These areas include energy conversion and storage; nano-photonics; nano-biotechnology; nano-medicine; biophysics; water purification and desalination; biological and chemical sensing; quantum science and technology; thin films, and nano-materials synthesis, characterization, and interactions.



## ABC ROBOTICS INITIATIVE

The ABC Robotics Initiative aims to advance innovative multidisciplinary robotics research at BGU in the domains of agricultural, biological, and cognitive robotics. The Initiative is driven by a vision and a commitment to collaboration and interdisciplinary research and brings together senior and junior researchers from different disciplines, departments, and faculties, to spark new ideas and research directions. Multidisciplinary R&D teams contribute to the development of robotics by advancing theoretical foundations, practical applications, and innovative designs.

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# INTERDISCIPLINARY RESEARCH AT THE FACULTY OF ENGINEERING SCIENCES



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## PAUL IVANIER CENTER FOR PRODUCTION MANAGEMENT

The Paul Ivanier Center for Production Management aims to advance multidisciplinary research in the field of operations management through collaboration between research groups from various faculties and departments. Research focuses on theoretical and practical aspects of supply chain management, operations research, business analytics, scheduling, queue theory, quality assurance, decision making, crisis management, ergonomics and work environment design, safety, and accident prevention. Applied research is advanced in various application fields, such as manufacturing, service, and health.



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## MEDICAL INFORMATICS RESEARCH CENTER

The Medical Informatics Research Center is a university-wide multidisciplinary research center, which capitalizes on the strengths of several participating groups from diverse faculties and departments. Research focuses on the theoretical and practical development of computational tools, investigating their application at multiple collaborating medical centers in Israel and abroad in order to support evidence-based clinical therapy, patient monitoring, discovery of new medical knowledge, clinical and pharmaceutical research, health-care policy making, and individual patient involvement and decision making.



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## BLECHNER CENTER FOR INDUSTRIAL CATALYSIS AND PROCESS DEVELOPMENT

The Blechner Center for Industrial Catalysis and Process Development, founded in 1995, conducts interdisciplinary research related to fundamental and applied aspects of catalysis and catalytic processes. Work at the Center combines exploratory research leading to novel technologies and projects for industrial applications. Most notably, researchers at the Center have developed novel, proprietary catalytic processes for converting CO<sub>2</sub> to alternative, fungible liquid fuels and chemicals.

# SPOTLIGHT ON STUDENTS

Students at the Faculty of Engineering Sciences actively engage in research as part of their education and training. Undergraduate students carry out a two-semester engineering project during their fourth and final year, which provides hands-on experience in the realities of research, as well as excellent application-oriented experience for future work in the industry.

The overall curriculum, and the final projects in particular, help produce accomplished and dedicated engineers with practical experience, who are highly prized by industry. Some of these projects have culminated in prize-winning advances in science and engineering.



## iGEM Competition

Embracing interdisciplinarity and displaying exceptional creativity, students drawn from across BGU's different faculties form a team, representing the University at the prestigious **iGEM Competition** in synthetic biology, which brings together thousands of students from all over the world. BGU's team has ranked among the top contenders, building genetically engineered biological systems and conceiving solutions to real-life challenges.



## BGU Racing

BGU's student race car team, has been building Formula race cars as final projects by engineering students since 2011. Every year the students participate in Formula SAE competitions in Europe, showcasing their products alongside student teams from all over the world – many with substantial support from prestigious automobile manufacturers, while Israel does not have a domestic automobile industry at all. BGRacing has designed both internal combustion engine race cars and a fully electric car, attaining impressive results on the tracks.

# INDUSTRIAL AFFILIATES PROGRAM (IAP)



The Faculty of Engineering Sciences at Ben-Gurion University of the Negev is proud to present the Industrial Affiliates Program (IAP), established in 2021 to enhance and strengthen the relationship between the academy and industry and to create a collaborative community of partners where the complementary needs of industry and academy are met.

Ben-Gurion University of the Negev is committed to applying its excellence in research and education to drive development in the Negev, thereby bringing prosperity, expanded opportunities, and growth to the entire country

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<https://in.bgu.ac.il/en/engn/iap>

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and to the world at large. The extraordinary ecosystem of technology innovation and business collaborations booming in Beer-Sheva today exists because of BGU and especially its Faculty of Engineering Sciences. Companies and entrepreneurs that are part of this remarkable synergetic environment already enjoy the benefits that come from proximity and collaboration with BGU's stellar researchers and their cutting-edge facilities.

Members of the Industrial Affiliates Program enjoy exclusive access to BGU research and labs through participation in research seminars, access to the BG Negev Ltd. (the University's technology transfer company) databases and personnel, opportunities to network with researchers, priority participation in spotlight fairs and webinars where research and development directions are presented, and much more.

The Faculty of Engineering Sciences strives to produce the best possible engineer, who will serve the needs of industry and government with the most up-to-date knowledge, and superior problem-solving and leadership skills. Membership in the IAP provides exclusive access to our students at all levels at a wide range of contexts and opportunities – including exclusive exhibitions and presentations, discounted participation in career fairs and priority postings on the BGU careers website, and hosting of summer internships. Members can also gain further access and exposure through sponsorship of events at the Faculty and contributing to our scholarships and awards program.

We offer three levels of IAP membership - Silver, Gold, or Platinum, tailored to suit each affiliate's needs and desired degree of involvement. Membership ensures access to students and graduates of the Faculty, as well as a range of Faculty programs and activities suited for both large and small companies.

# ABOUT BEN-GURION UNIVERSITY

Ben-Gurion University of the Negev (BGU) is the fastest growing research university in Israel and is known for its commitment to excellence in research and teaching, for its commitment to the community, and for its dynamic atmosphere and vibrant student life. With 20,000 students, 6,700 staff and faculty members, and three main campuses in Beer-Sheva, Sde Boker and Eilat, BGU is an agent of change, fulfilling the vision of David Ben-Gurion, Israel's legendary first prime minister, who envisaged the future of Israel emerging from the Negev. Over a third of its students participate in one of the world's most developed community action programs.

Founded in 1969, BGU effects change, locally, regionally, and internationally. With faculties in Engineering Sciences; Health Sciences; Natural Sciences; Humanities and Social Sciences; Business and Management; and Desert Studies, the University is a recognized national and global trailblazer in many fields, actively encouraging multi-disciplinary collaborations with government and industry, and nurturing entrepreneurship and innovation in all its forms. Indeed, the University is at the heart of Beer-Sheva's innovation ecosystem, where leading multinational corporations and start-ups eagerly leverage BGU's expertise to generate innovative R&D.

For more information, visit the BGU website.  
[www.bgu.ac.il](http://www.bgu.ac.il)



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אוניברסיטת בן-גוריון בנגב  
جامعة بن غوريون في النقب  
Ben-Gurion University of the Negev

