

ENGINEERING A BETTER WORLD

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SCE tops Israel's engineering faculties ranking



SCE has been ranked a distinguished **fourth place** among all engineering faculties in Israel by prestigious magazine **Forbes!**

A recently published study on behalf of the Chief Economist's Office at the Ministry of Finance examined the connection between academic studies and social mobility – the ability to climb up the socioeconomic ladder of society compared to one's parents' generation. The study examined, among other things, which educational institutions and fields of study contribute to high upward economic mobility.

The researchers' findings indicate that the science disciplines are those that lead to the highest social mobility. Among other things, it was indicated that the engineering profession is one of Israel's leading professions, granting a 55% chance of success to ascend to the top fifth of wage earners. The average

wage level of graduates of the engineering faculties is significantly higher than the general average in Israel.

The annual project "Best of 2017", led by economic magazine "Forbes" for the second consecutive year now, presents a ranking of the best faculties in Israel in the fields of engineering, computers and medicine. In the engineering studies category, SCE was ranked as one of the leading in Israel – in the fourth place, after the Technion, Tel Aviv University and Ben Gurion University of the Negev.

"Today, 18.1% of all students in Israel choose the engineering profession as one which will propel them upward and guarantee their economic future."

The question is: at which academic Institution should one study?"

The project looked at a variety of variables, among them the rate of students completing their studies within the standard period, the average wage and employment rates of graduates of the faculties two years from the completion of their studies, the ranking of the institutions on the international Shanghai Index for the year 2017 (which, along with its general ranking, also provides rankings in a long list of specific fields of study), as well as data indicating the level of influence exerted by the faculty over its discipline on the international level. The examination included, among other things, the rate of academic citing of the faculty's researchers' papers and studies by other researchers in the field.

Other than these criteria, and to reflect the position of the project's key target audience, one of the central indices in the ranking is the National Student Survey for the year 2016 of the Student Union, which was conducted by the research institute "Ma'agar Mochot". The survey was answered by over 11 thousand students from across Israel.

From the President's desk



President of SCE – Professor Jehuda Hadad

The beginning of the 5778 (2017-2018) academic year finds us engaged in diverse work for you and trying to benefit you, with over 8,000 graduates and 5,500 students flocking to the Beer-Sheva and Ashdod campuses every day. We have grown to be the largest institution of higher education in Israel for engineering studies; an institution that creates large-scale and important social change through education – which is the source of our pride.

As you can read at the very opening of this issue, SCE – the Sami Shamoon Academic College of Engineering – has been ranked fourth among all engineering faculties in Israel.

Various parameters have been examined, including the rate of students who complete their studies within the standard period, the average wage and employment rates of the faculties' graduates two years from the completion of their studies, the ranking of the institutions according to the international Shanghai Index for the year 2017, as well as opinions from you, our students.

All these, and more, engender our commitment, as an academic institution, to industriously work on continued growth and the development of academic excellence, in a way that would allow engineering work to lead us to a better world.

I wish you continued renewal, development and growth to new heights with us.

May you have a successful and fruitful academic year in all fields of your work.

Go forth and succeed!

With warm regards, and wishing you a happy new year,

Prof. Jehuda Hadad

The “Engineering A Society” Convention



Last July saw the holding, for the second consecutive year now, of the “Engineering a Society” convention, which centered on the ability of engineering tools to change and improve lifestyles, while closely inspecting the society we live in.

When laypersons hear the term “engineering”, they envision numbers, rulers, tables, computers and calculators, schematics, technology, progress and especially a science-based, focused, evolving and futuristic way of thinking.

All this is true. Engineers do indeed study these subjects and have these qualities, but they are also blessed with creative, outside-the-box thinking which can lead to significant change and to the improvement of the shape of society as we know it. They are the ones who can execute technological challenges we encounter – and ones we are also set to encounter down the road. The convention is therefore a venue where technology and society meet and conjoin in a lengthy and warm handshake.

The opening of the convention was accompanied by an impressive exhibition of “socially-oriented final

projects” – created by fourth-year students – using the arsenal of tools with which they have been equipped during their studies at the college – products, tools and information systems which could affect and benefit society in emergencies, green construction processes, fighting the cost of living, protective measures for children (on the internet, in family swimming pools, in cars) and so forth. We have no doubt that this has merely been the graduates’ first step in contributing to society.

The college has been blessed with gifted students, as elaborated in these pages, as well as with students who are active in the community all year long; students who contribute from their time and effort to give to various and diverse populations in society. Social leaders among the students have been recognized for their work.

In the convention, the first of its kind in Israel, the students and esteemed

guests learned of the blessed initiative of Israel’s President, Mr. Reuven Rivlin, to bring people together, and of the main points of the “Israeli Hope” program. Representatives of the “Four Tribes” (see the Israeli President’s speech about the secular, religious, Haredi and Arab populations) presented their creeds, out of an understanding of the many challenges for a shared life in our small and growing country.

Among the arrivals to lecture at the convention were also entrepreneurs who had been able to crack the correct code for success and social leadership. We had the privilege of listening to Itai Kornberg – Founder, Partner and V.P. of Technologies, who recounted and presented to us “Eyecontrol”, a communications system which registers pupil movements and allows significant communication to ALS patients and their families, as well as Haim Bachar – V.P. of Business

Development, who presented “Over 6 6”. The system created by him and his friends will allow all citizens of the world to order advanced optometric instruments everywhere, independently of an optometrist and at significantly reduced costs, on the various websites.

The convention, which centered on society, is certainly an important milestone in the world of engineering. We hold the tools to make a difference! We only need to have the wisdom to use them. We will see you at next year’s convention, and until then – do not forget to practice “Engineering-Social Activism”.

According to Haim Bachar, V.P. of Business Development at “Over 6 6”, “alongside the accelerated technological development and the opportunities generated by the Digital Revolution, it is important to have the wisdom to use these means to reduce social gaps. In this age, we have been given the unique opportunity to use knowledge and create new business models, which will allow maintaining a business company for purposes of profit while concurrently affecting a significant social impact. I was glad to learn that SCE creates a dialogue between the world of engineering and that of society, and I wish and hope that it serves as a model for study programs in similar institutions.”

Itai Kornberg, Founder, Partner and V.P. of “Eyecontrol” Technologies: “The ability of each of us to make a difference, be it only on a small minority of the population whose voice is unheard, gives great hope for living right and well. I am certain that our social perception can be greatly modified using the engineering tools that are taught.”

Engineering Social Change

Mr. Moshe Karotchi, Dean of Students

The popular discourse regarding a future shortage of engineers is today concerned with the industry’s need of employees. The significant necessity of engineers for effecting social change is almost never discussed.

Anyone who is closely familiar with the world of engineering can attest that beyond the world of numbers and calculations there exists a whole world of understanding the human need and ability to find scientific solutions to create a better world.

Thinking, engineering tools and technological knowledge can lead to the finding of solutions for people with various needs, to change lifestyles and to promote processes of social change. Using engineering tools, processes can be developed to achieve green construction, to fight the cost of living, to help in emergencies and in many other ways.

Society is subject to constant changes and is never stagnant, and the same is true of engineering. Engineering is part of society thanks to the students and graduates of the field, who create social change, alter and improve the quality of life using engineering-technological developments.

In the urbanization process taking place around the world, for example, such developments are necessary. Since many people wish to live in the city, this requires cities to formulate a new strategy for the future management of smart cities. This reality poses many challenges.

Engineers hike up their sleeves and attempt to find solutions for basic needs such as the provisions of sustenance (food, water, energy and transport), the provision of various services such as sanitation, policing, health and education, social services, the development of ideas

and innovations – from control rooms which monitor municipal activity to street signs that are personalized for each resident.

Everyone talks about smart cities, but what is it that actually makes a city smart? Do planners understand the meaning of a “smart city”? And what about radiation? Will a smart city feature a more efficient usage of municipal resources such as energy, traffic, transport and the consumption of water and electricity? In order to carry out effective planning – one which would serve residents and improve their quality of life – “socially-oriented” engineers must consider the needs of the individual. Only then will they be able to have an optimal effect on space. This is the reason for the importance of socially-oriented engineers, who are aware of the needs and problems of society and constantly aspire to benefit it.

The social discourse is important for the sake of increasing awareness to the needs of society. Exposing students to diverse content and to social issues is important in order to enrich the discourse and bring it onto each student’s academic “desk”. This is a discourse different from the one the student had experienced in their engineering-technological studies, intended to expose the student to the social aspects, so as to develop social awareness and sensitivity among the students.

In this manner, the students will be not only excellent engineers in the future, but rather also engineers with added value; engineers with social awareness, who have internalized and realized that by using the engineering tools they had gained, they can have an effect on the lives of us all and instigate processes of social change.

Industry day: strengthening the bond with future workplaces



An "Industry Day" for Fourth-Year students of the Electrical and Electronics Engineering Department was held with the purpose of exposing students to "hot" subjects and projects in the industry. The event was arranged by Dr. Dmitri Beimel.

As part of the event, industry officials gave lectures on various fields of electrical engineering, electronics engineering and communications.

Gadi Shushan, V.P. at "Ormat", spoke of the founding of geothermal power

stations and about additional sources of renewable energy. Efraim Hanoch lectured on the subject of "job interviews for the position of Electrical Engineer" and provided tips for success in job interviews.

Marcel Allenbogen, Head of Conduction at the Electric Corporation, reviewed innovations in the monitoring of conduction lines of the electricity network such as the use of drones, robots and more. He spoke of state-of-the-art technologies in the field of

The Electrical and Electronics Engineering Department arranged a meeting between students in their final year of studies and officials in a variety of fields in the industry

electricity network tests, most of which have not yet been incorporated in Israel.

Prof. Victor Kagalowski, Head of the Electrical and Electronics Engineering Department at the Beer-Sheva campus greeted the students and emphasized the importance of the "Industry Days" and of additional tours and actions in strengthening the bond with the industry and in facilitating students' integration in that industry upon completion of their studies.

"SCE's students are exposed to challenges which accompany large organizations"

The Head of the Planning and Resources Unit at Ashdod Port gave a guest lecture at the Final Project Preparatory Course of the Industrial Engineering and Management Department at the Ashdod campus

As part of a special collaboration of the Industrial Engineering and Management Department at the Ashdod campus with the port in that city, the Head of the Planning and Resources Unit at the Ashdod Port Company, Yoram Yehezkel, came to the campus as a guest lecturer in the Final Project Preparatory Course.

Yehezkel spoke of the activity at the port, of the place of an industrial engineering and management engineer in such activity and of the relations between the port and the city of Ashdod.

Other than the students of the course, the lecture was attended by the Head of the Industrial Engineering and



Prof. Haggai Ilani and Dr. Ofer Barkai award Yoram Yehezkel with a Certificate of Appreciation

Management Department, Dr. Haggai Ilani, and students from the department in various stages of their studies.

Dr. Ofer Barkai, Final Project Supervisor at the Industrial Engineering and Management Department and the person responsible for the college's collaborations with various elements in the city of Ashdod – including City Hall, the port, the Electric Corporation and Assuta Hospital – awarded Yoram Yehezkel with a Certificate of Appreciation, together with the head of the department, Dr. Haggai Ilani. According to him, the anticipated cooperation between students from the college and the Ashdod Port Company will be instrumental in exposing students to challenges that accompany large organizations.



Strengthening International Relations

An expedition of students and researchers from India's IIT was hosted by the Mechanical Engineering Department, to promote the cooperation formed in recent years between the two institutions

In early September, the college hosted students and researchers from India, led by Prof. Charo Munga, a lecturer at the Design Department of Guwahati IIT (Indian Institutes of Technology), in the State of Assam in India. Prof. Munga made the visit in order to promote joint research with the Mechanical Engineering Department at SCE on the subject of the design and planning of robots for the elderly.

The college's Mechanical Engineering Department has in recent years maintained international collaborations with lecturers and students at IIT. Students from both institutions have planned and carried out joint projects as part of the E-Studio program, which focuses on such social projects as physical therapy facilities for children,

technological games for blind children and on-campus mobility facilities for students.

The Indian students came to Israel to meet their colleagues on the project and to jointly participate in the "Mechathon 2017" competition, which took place as part of the Mechanical Engineering Week events at the college. The hosting of the expedition was entrusted to the Head of the Mechanical Engineering Department Dr. Gedalia Mazor and Prof. Ico Avital.

Prof. Munga has now visited the college for the third time, and this time also came in order to promote joint research on the subject of "interaction between robots and the elderly". According to her, "SCE's Department of Mechanical

Engineering and IIT's Department of Design have in the past year worked together, and bonds of friendship have been formed between the students. While quite a few problems arose during the joint work, such as time differences, cultural difference and the language barrier, they have been able to create lovely joint projects together. Shared learning is beneficial and enriching to all parties involved."

Prof. Munga said that she has had the chance to tour Israel and has mostly met positive people, who can enjoy and appreciate the small things in life. "At the end of the day, our work is for people, and we must consider the human use of everything we do".

A special theme course in civil engineering: Taking part in significant research

The course, taking place in a project oriented environment, allows the students of the Structural Engineering Department experience the world of research.

A unique course taking place in a project oriented environment allows students of the Construction Engineering Department at Beer-Sheva campus to get a taste of the research world. During the course the students take active part in staff members' research work: they read scientific literature, plan the experimental program with the lecturer, carry out the experiments and learn how to analyze the results.

During the 2017 spring semester, two student groups took part in two studies. Reuven Gomeh, Eliav Yifrach, Avi Cohen, Netanel Levy and Avidor Zvi, under the instruction of Dr. Rami Eid, examined methods of reducing the amount of steel hoops in high-strength concrete columns. Reinforced concrete columns of high-rise buildings require relatively large density of steel hoops, in order to achieve the ductility required according to international standards. Sometimes,

the required hoop density poses an almost impossible challenge in carrying out the column casting.

The current study examines two alternatives: the first is using nets made of composite materials as an addition to the internal steel hoops; the second is using casting molds made of composite materials, to serve as an external reinforcement shell after the concrete has hardened. The students chose these alternatives having read and thought about the possible solutions. If the study results show feasibility, they would allow an expanded use of high-strength concrete in Israel and around the world.

Another group of students worked with Dr. Dagan Bakun Mazor and examined the effect of clayey soil inflation on the relative movement of two parts of a building. The students Yinon Margaliot and Yarden Azri designed and assembled a system that measured

shifts along the seam between a kindergarten and the built-in security room next to it. The assumption was that the shifts between the two parts of the building were caused by inflation and contraction of the soil, resulting from changes in the degree of moisture. The students constructed a computerized model which enabled them to calculate the expected movement resulting from soil inflation. They keep monitoring the results obtained by the measuring system, which continues its data collection toward the rainy season.

The current study calibrates measurement methods for assessing differential shifts in structures. Later on, it is destined to examine various solutions of basing methods, which will reduce the movement due to the inflation of the soil.

image: Prof. Rami Eid's group: planning high-strength concrete casting



Came to strengthen and left strengthened



The student Arava Arar

A unique final project, carried out this year by the student Arava Arar, under the instruction of Engineer Moav Maidi, at the Construction Engineering Department, suggested a design for the strengthening of residential buildings against earthquakes, while taking economic feasibility into account. The National Program for Improving the Resistance of Buildings to Earthquakes includes engineering solutions within National Outline Plan 38, which proposes that entrepreneurs strengthen existing buildings and improve assets by adding

floors to existing buildings. But in practice, improving assets in peripheral areas is not economically feasible, since the asset's value is not high enough to cover the costs of its upgrading.

The unique project indicated otherwise. One can add to an old four-story building columns of residential secure spaces (Mamadim) in the corners of the building, as well as a concrete-steps staircase, along with strengthening existing pillars and closing the pillar floor, to make the building resistant to earthquakes and meet the Home Front Command's requirements, while keeping the improvement of the asset economically feasible.

Arava examined the programs of an old building in Neighborhood 4 in Beer-Sheva and tested its resistance to earthquakes through a computerized analysis and

comparison to the New Standard 2413, which deals with buildings' design to resist earthquakes. Subsequently he designed a constructive solution based on the additions described above. The new additions actually create a hardening system for the building that would absorb energy during an earthquake.

The designing was done with consideration to Standard 2413, which deals with assessing buildings' resistance to earthquakes. Arava, together with his mentor Moav Maidi, showed that at the cost of several tens of thousands of shekels per apartment, alongside the sale of new apartments that are created on the columns' floor, you can find a solution that will save human lives and minimize property damage in the next earthquake or missile attack.



In summer 2017 SCE held an intern program in cooperation with Onward Israel and Israel Experts. The eight-week long professional internship program allows Jewish students from abroad to live in one of Israel's cities and specialize in their fields of interests alongside their Israeli colleagues.

The students, who were chosen for the program based on their education, practical experience and a personal interview, were assigned to work with faculty members from the Mechanical Engineering and the Electrical and Electronics Engineering Departments, engaged in research, assisted in active projects and worked at the research laboratories, while using the most advanced resources offered by the College. In addition to the academic-professional aspect, the interns got to experience students' life in the College, took part in college-wide activities, and got to know faculty members and students from various departments.

Dr. Nir Trabelsi, from the Mechanical Engineering Department, worked with Charlie Benamram, a student of biotechnology engineering from the U.S., on developing a boot-cast hybrid and printing it on a 3-dimensional printer. According to Dr. Trabelsi, "such cooperation is likely to contribute both to our institution, by expanding the research areas and developing new ideas, and to the student interns, who expand their

knowledge in innovation and technology areas."

Nathan Feacher, a Mechanical Engineering student from Texas, took part in developing a robot that can stabilize itself on a ball (a ball-bot). According to Nathan, "the labs are just wonderful. I really like the College, the campus is beautiful and the people are nice and friendly. I met a lot of students through the various activities I took part in. I participated in the 'Mecathon', which allowed me to meet people from all over the world and not just from Israel."

At the end of the program, the interns convened for a closing session, in which they presented to researchers and to the Dean of Faculty the products of their activity in the program, some of which would serve as basis for continuing research. Dr. Etan Fisher pointed out that "all the interns achieved significant results, and it is equally important that they have evidently undergone a significant experience, from both the scientific and the personal points of view."

Dr. Avshalom Danoch, who founded

and expanded the cooperation between SCE and the program's organizers, emphasized: "The internship is a wonderful opportunity for the College to take part in a unique Zionist project, closely get to know various academic institutions abroad and enrich the knowledge of students and researchers. The interns become SCE's representatives abroad, and that forms a basis for creating academic-research bonds between the institutions, and for building a database of potential students for the College's various programs - internship program, continuing studies and such."

The Department of International Academic Relations thanks the faculty members who chose to participate in the program this year and invites faculty members from all the departments and the administrative units to apply for participation in the program next summer.

To apply for participation and for further details, please contact the Intern Program Coordinator, Ms. Maggie Goverman, at E-mail: maggi@sce.ac.il

Students have developed a system that would prevent children from drowning in home pools

The innovative system, invented by the students Ron Avraham and Netanel Gashma, under the instruction of Dr. Etan Fisher and Efy Propos, identifies a child approaching the pool unattended by an adult, whether at home or in the yard, and raises a plastic fence to stop the child from getting into the water. A warning text message is simultaneously sent to the parents.

The students Ron Avraham and Netanel Gashma focused in their final projects on a product that would try to solve a problem that preoccupies Israeli society, particularly in the hot summer days. Avraham: "We noticed that during the summer there were many reports about children drowning in private pools, and

that's how we got the idea. We conducted a market survey and tried to figure out what would give us the best solution. A lot of parents told us the main risk was when they were not at home, or when they were in other parts of the house far away from the pool, not noticing that the child was running to the pool."

How can we stop a child from getting into the pool with no adults around?

The students took it upon themselves to develop a system that can be installed in any private pool at a low cost. The system includes a camera and sensors that can detect when someone is approaching the pool area. If it is a child – a plastic fence installed around the pool will rise up and

stop the child from getting into the pool. At that point a text message will be sent to the parents.

"We've installed an automatic plastic fence around the pool, which rises up when the system recognizes a child approaching. The fence is twice as high as the pool and makes it twice as hard for the child to get into it. In other words, even if the child goes on trying to climb the fence, it'll take much longer to get into the pool, and in the meantime the automatic system will send a message to the parents."

We hope to hear about the product being developed and marketed to the general public soon, in order to prevent the next drowning of a child.



Preventing crib death

Yakir Digodker, a student of the Electrical and Electronics Engineering Department, has developed a device to prevent cases of crib death, using a unique algorithm that detects changes in the baby's movements and skin color.

Yakir Digodker, a student of the Electrical and Electronics Department at Beer-Sheva campus, has presented for his final project, under the instruction of Dr. Tom Trigano, a possible solution that may prevent cases of crib death. He developed an algorithm that recognizes movements and colors through video photography and can enhance them in order to detect changes between the various frames. This way the system can warn about even the slightest changes.

"The project is based on a research conducted in MIT, Boston," says Digodker, "the existing algorithm can enhance movement and it is used for heavy tools and for the industry. I wanted to take the existing algorithm and add information to it, to make it suitable for baby cribs, so that it can detect a very delicate

movement like a baby's breath. Unlike the existing algorithm, mine actually works on movement cessation or color change, due to the phenomenon's symptoms, which consist of turning blue and ceasing to breathe. The system knows what the desired color is and it searches for movement. The minute it detects a color change or lack of movement, it sends a warning to the user. Since the system compares each pair of frames, the identification is quick and allows a sharp change to be detected within two and a half seconds from the moment the baby has stopped breathing."

The idea for the project came up during a family dinner: "the subject of crib death came up in the conversation. Relatives of mine said that the devices existing in the market did not give a quick enough

warning and were also disturbing for the baby, and therefore many people eventually turned them off. So I looked for something that would provide better results, without disturbing the baby's sleep, and since I'm very interested in image processing, I decided to delve deeper into this field."

Science has not yet fully comprehended the death crib phenomenon. Many doctors argue that there is no way to clearly put your finger on the right reason. According to the Ministry of Health, the phenomenon rate in Israel is low compared to other countries, but around the world it is about 0.3-0.5 cases for each 1,000 births. "I hope that my project can offer a cheap and doable solution, so that in the future the phenomenon will disappear."

An innovative development: invisible solar panel

At IMI Systems' (Israel Military Industries) request, students from the College developed a prototype for two discrete solar panels, which would enable their users, among other things, to avoid taking too much space or harming the natural landscape.



An innovative development has been presented for the first time through collaboration between IMI Systems and SCE: discreet solar panels.

This is a prototype of an innovative, "discrete" system that generates energy from solar panels, developed by B.Sc. students from the Mechanical Engineering Department, under the instruction of Eng. Motti Peretz and Dr. Nir Trabelsi. The students developed a prototype for two panels – one hidden under the grass and the other under a wood surface.

The demand for developing the system came from elements within IMI Systems, who often approach Israeli academic engineering institutions with requests to find them various technological

engineering solutions. This time, they raised the need for a new way to utilize energy from the sun without taking too much space, minimizing agricultural areas or harming the natural landscape.

The students Yoni Weyburd, Ahikam Naor, Lior Zuari and Mured Rahman took the challenge and developed the system as their final project, under the instruction of Dr. Nir Trabelsi.

In the course of the project they built a prototype that presented two solar panels. As specified earlier, one was hidden under the grass and the other under a wood surface. Each panel consisted of two parts: one was the external interface, exposed to the sun and designed to contain optical fibers at surface level, and the other was

responsible for the content and for making the optical fibers accessible to the panel effectively, covering the entire panel in terms of enlightening.

Through the experiments they conducted, the students proved the system's feasibility and efficiency. The highest efficiency was 94.5% of the efficiency of a photoelectric cell completely exposed to the sun.

IMI Systems' representatives, who attended the presentation, declared that it was "a major breakthrough." The prototype meets their needs and is likely to constitute a breakthrough in the field of energy efficiency.

Following the experiment's success, the development is expected to be transferred to IMI Systems.

Solutions for The Industry and a Marriage Proposal on Water

“The International Mechanical Engineering Week” hosted representatives of the industry, together with academics and students from Israel and around the world, for a variety of events, competitions and projects ■ Among the projects at the traditional Dead Sea Competition was a robot leading a ring and fireworks to help with a marriage proposal taking place on water.

As part of the events of the “Mechanical Engineering Week” taking place at the College, SCE hosted delegations of lecturers and students from India, Portugal, U.S. and Singapore. Among the guests were students and faculty members of the Indian Institution of Technology (IIT), UP University in Portugal, NTU University in Singapore, and some U.S. universities.

The “Mechathon 2017” competition was held for the first time as part of the week’s events, with the participation of second-year students from the College and B.Sc. and M.Sc. students from the U.S., India and Portugal. Giant industry companies - SodaStream, Netafim, Polygon Tamarisk, Nano-Cent and Carasso Science Park presented engineering problems which they face on a daily basis. The competitors were divided into mixed groups and were asked to come up with solutions and present them, using presentations and prototypes, to an international jurisdiction team and to the industry’s representatives. The three excelling groups were given the President’s Award at the end of the event.

According to Dr. Gedalya Mazor, the Head of the Mechanical Engineering Department, in spite of the short time they had at their disposal, all groups came up with creative, innovative solutions, which exceeded by far the companies’ expectations. Some of them were even asked to present their solutions later on to senior officials in the companies, for further planning and development.

Later on during the week, 76 fourth-year students presented their final projects. On the whole, 43 projects and engineering prototypes were presented to an international jurisdiction committee. The projects dealt with five main areas: energy; robotics, control and mechatronics; biomechanics; product engineering and material properties; research projects.



To conclude the week, the Mechanical Engineering Department’s third-year students went to the Dead Sea, for the traditional “Dead Sea Competition”. The students have constructed watery environment controlled robots, designated to carry out deliveries of drinks, popsicles, and sunscreen lotions for sea bathers. The competition was held in front of a jurisdiction committee consisting of our College professors, the industry’s representatives and the visiting professors from India, Singapore and Portugal. The machines were required to meet several criteria, such as an autonomous ability to cruise in water, automatic operation and the ability to carry drinks. One of

the leading groups constructed a robot that led a ring and fireworks as part of a proposal taking place on water.

Dr. Mazor concluded: “this year we have deepened our academic cooperation and expanded the activities, in order to expose our students to the forefront of global technology. I thank our distinguished guests and, of course, congratulate our students for the high level of the projects and for the innovation, which set a high standard for future cycles. These are testimonies to the success of our program in training mechanical engineers with combined interdisciplinary knowledge, as required by the industry.”

The fascinating journey of “choosing tomorrow” – social-engineering entrepreneurship for the community

Second and third year students from both our campuses volunteer in social organizations and develop engineering projects that meet the organizations’ needs.

The College’s aspiration for excellence and for a better future for all is one of the most significant values according to which the Dean of Students operates. Future technology is already here, the integration of engineering into social life is required, and no one is more worthy of the task than SCE students.

In the course of the “choosing tomorrow” program, founded by the Jewish Agency in conjunction with the Dean of Students, the students are offered a scholarship in exchange for working, using their personal and engineering knowledge, to solve social issues. The students work for senior citizens, holocaust survivors, youth organizations, their own residential area or other students in the College. Aside from the scholarship, they gain a great experience, personal empowerment and team spirit, which increase their motivation even more. This work helps integrate social values into their studies and final projects.

The Dean of Students is proud to present the “choosing tomorrow” leadership team on behalf of the Jewish Agency for the school year 5777 (2016-2017):

Ashdod campus: “choosing tomorrow - forever”

We are a group of students from Ashdod campus, working together to lead social change, creation and affiliation to a young community as part of the “choosing tomorrow - forever” program, which focuses on a unique track of social initiatives for the benefit of holocaust survivors in Ashdod. In the course of our activity we accompany holocaust survivors through personal meetings and initiate community events, in order to provide solutions for their loneliness and needs, and connect them to the community as an integral part of it. We feel we have a real obligation to the survivors and a sense of mission, and believe that significant work will enable us to connect with the

community and create a consolidated, strong society.

The group has been working for six months, and it consists of 11 students, second and third year students of the Electrical and Electronics Engineering and the Mechanical Engineering Departments. We worked on connecting the students to the activity and on consolidating the group, and then each student was assigned to a holocaust survivor who is an Ashdod resident.

Since the establishment of the group, we have led several events in the city, among which were Purim and Passover events at “Yahalom Center” for the elderly, and a “memory in your living-room” event at the College, where we hosted one of “our” survivors.

In the course of our everyday activity with this sensitive population, we encounter quite a number of problems that require innovative solutions. Our engineering studies help us a lot in planning our work, identifying the problems and finding the solutions, while thinking “outside the box”. We believe that combining the engineering and technological world to the social one will contribute greatly to the community we work with and to achieving a better world.

Beer-Sheva campus: “choosing tomorrow”

The program at Beer-Sheva campus was already opened last year, so that very soon our cycle (cycle no. 1) will have completed a second year of “choosing tomorrow” in the College.

A wonderful group of 13 students from various departments take part in our unique program, working to strengthen social associations in the city. Most of these associations have to deal with a constant lack of resources and budget. This is where we come in, identifying problems and helping through engineering solutions, having acquired the necessary knowledge through the program and

through our studies. The group touches the very heart of the social gaps in Israeli society in general and in the southern district in particular. During our first year in the program we volunteered in various associations in the city and studied them in depth: we interviewed, investigated, surveyed and suggested several engineering-social solutions to streamline the organization. A committee that convened in the summer chose the appropriate engineering projects, and we have been working hard on them since the beginning of the year.

Apart from all this goodness, we have met during the year with CEOs of associations and movements and with social entrepreneurs and startup managers, toured the various neighborhoods of Beer-Sheva and the Negev in general, and became a group of friends who are actually a family.

We entered the program at the beginning of last year with a bit of skepticism regarding its ability to empower us and provide us with short and long term tools – both from the social entrepreneurship and from the professional points of view. However, we soon realized that many of the issues we were dealing with ran deep, and that the call to “act when something is bothering us” worked overtime for us. Our surprise did not skip the social aspect as well: we became a family, whose consolidating evenings, shared learning and mutual assistance became a matter of course. Knowing we have “a safe haven” within the academy helps us in many ways, particularly in stressful exam periods.

Today, having spent a year and a half in the program, we can clearly say that our personal experience as students is double – together with significant engineering studies, which are taught at the highest level, we get to engage in social activity that undoubtedly empowers us, enriches our studies and grants us a great deal of personal gratification.

ERASMUS +

Mobility and capacity building in a nutshell

Erasmus + is a European Union program that supports the promotion of young people's education and training. The program, designed to improve the higher education systems in the participating countries, is based on international academic collaboration and promotes internationality, innovation and excellence. SCE began its activity in Erasmus + several years ago, and is working in two main tracks: mobility and capacity building.

Mobility

The mobility track allows the exchange of students and faculty members, and offers them an opportunity to study or teach at a higher education institution in a foreign country. In the course of the program, third and fourth year students or M.Sc. students travel abroad to study a semester or two in institutions that collaborate with SCE. The European Union pays for their plane tickets and for the costs of their stay.

Karin Saadia, a third year student of the Chemical Engineering Department, is one of three students who were chosen to go on students' exchange to the University of Cantabria in northern Spain. The three students went there for three months in the summer semester of 2017, in order to work on their final project. Karin says, "During these three months we spend our days in the office or in the lab, working on the project itself. Afterwards, in the evenings or on holidays, we can enjoy Spain. The town where we are staying, Santander, is a beautiful, unique port town in the north of Spain, and so far we have managed to visit Bilbao, Barcelona and Madrid as well. I think that students' exchange is a good opportunity for students to get to know new places, cultures and people. In addition, there's the advantage of doing your final project at a relatively early stage of your studies."

Karin Saadia, Stas Shaklain and Noy Admon at the University of Cantabria, Spain.

Yoad Wolfstal, a fourth year student of the Software Engineering Department, has gone to Magdeburg University in Germany for a period of six months, and chose to share his experience with us:

"How do you squeeze six months into one paragraph? A semester abroad is not something you can prepare yourself for. You pack a few shirts, a few notebooks, and hope for the best. The 'adjustment week' is mainly meant to help you adjust to German bureaucracy. In between you realize you're the only Israeli there, with no one to turn to in tough moments. But eventually, this is the best thing that could happen to you, because you're 'thrown' into a melting-pot of people from all over Europe – Italy, Albania, Finland and Russia. You learn something from each one of them about their culture, and you teach them about yours. On Shavuot we made a dairy meal and on the 4th of July we had an American BBQ. Studying in Germany has an additional aspect, which Israeli students wouldn't feel in other countries: there is great importance in being a Jewish, Israeli student in Germany, considering the history of the Jewish people. You realize you represent something, and you feel very proud talking to locals (in German or in English) and telling them that you're from Israel. During your stay you don't exactly rest on your laurels – there are weekly assignments, biweekly assignments, monthly presentations and a final project (in Israel!) that you need to work on

through Skype with your partner. And yet, the Students' Association organizes trips once a month, and suddenly places like Prague and Amsterdam are no longer so far away or expensive. To sum up, this is a recommended experience. It enriches you and broadens your horizons, in terms of learning and gaining experience. 'A big head cuts the world,' I was once told by a good friend. The exchange of students and faculty members through Erasmus + is a unique opportunity to gather new knowledge, experiences and friends!"

Capacity building

The purpose of this program is to promote the development of the higher education system by promoting modernization and internationality and by increasing the teaching quality of higher education institutions in the participating countries. In the course of the program, higher education institutions can initiate projects that would help them cope with contemporary challenges. Most of the projects are about innovation, sharing knowledge and integrating advanced technologies into teaching.

In the last two years SCE has been an active partner at DOCMEN project, and these days we have been notified that the European Union has approved two other projects in which SCE is a partner: iPEN and BIOART. In 2017 the European Union has only approved four projects in which Israeli higher institutions are partners. Two of them are natural sciences and

engineering projects, in which SCE is a partner.

DOCMEN is a multinational project led by Cracow University of Technology, in which SCE is a partner together with other academic institutions from Israel and abroad, including: Space Technologies GMBH, ECM Denmark, Politecnico di Torino, Technische Universitaet Berlin, Bar-Ilan University, Tel-Aviv University, etc. The project, which deals with the development and implementation of microelectronics curricula, is being held for the second year and includes faculty members from the Electrical and Electronics Engineering Department, as well as from the Mechanical Engineering Department.

As we mentioned earlier, this year the College has won, together with many overseas partners, funding for two new projects:

iPEN – a project on photonic processes in nanotechnology, led by the Technological Educational Institute of Crete, together with seven higher education institutions from Israel, and in collaboration with institutions from Germany, Italy and the Netherlands.

BIOART – a project for developing a multidisciplinary curriculum on the subject of artificial implants for bioengineering, which will be led by Universidad Politecnica de Madrid and participated by four higher education institutions in Israel, as well as institutions in Ukraine, Austria, Belgium, Spain and Poland.

For further information about Erasmus + programs, please contact Ms. Maggie Goverman, the SCE International Programs Coordinator, at:
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Tel: 972-8-6475822



Yoad Wolfstal (second on the right), Magdeburg University, Germany



Karin Saadia, Stas Shaklain and Noy Admon at the University of Cantabria, Spain



Raz Agron and Ron Cohen, Aalen University, Germany

SCE celebrates big time

698 new engineers were qualified at degree-granting ceremonies in both campuses.



Last June, SCE celebrated the granting of degrees to its B.Sc. and M.Sc. engineering graduates for 2017. 384 graduates of the various engineering departments were qualified at Beer-Sheva campus, and 314 graduates were qualified at Ashdod campus.

698 balloons, like the number of degree recipients, were blown into the air and announced the beginning of the ceremonies. SCE President, Prof. Yehuda Hadad, opened the Beer-Sheva campus ceremony, with a moving speech, in which he talked about the long way the

College had done: "We started out as a small institution, with no infrastructures, but with a great hope. Nowadays, the College is a prestigious institution that qualifies each year 15% of all engineers in Israel. Today you receive your B.Sc. and M.Sc. degrees. Higher education is essential for a stronger society, and therefore each and every one of you is making our society better and more advanced. Great challenges lie ahead of you, and I am sure you can deal with them successfully using the tools you acquired here in the course of your studies."

The most exciting moment in the event was the show given by the "Voices from Orim" Choir of Orim School for autistic children. The excited audience stood up and applauded the children with thunderous applause. Prof. Hadad told the crowd that the relationship with the children had started when the College had organized Bar-Mitzva parties for them on "Good Deeds Day".

Rubik Danilovich, the Mayor of Beer-Sheva, congratulated the new graduates and referred to the engineering profession in our contemporary

world: "You are entering a crazy world, completely different from the one your predecessors knew. Here, in this wonderful college, you have received the tools to be successful in life and in your profession, but in order to break through you'll have to be curious and creative and think differently. This is not a 'me' world, but and 'us' and 'together' world. David Ben-Gurion, through imagination and madness, succeeded in achieving the impossible and established the State of Israel here. You are going to prove that the creative and loving minds leaving here today will create a new future for the people of Israel."

In the event that took place at Ashdod

campus, the Chairman of the College Executive, Prof. Eli Abramov, spoke about the Israeli industry: "The atmosphere at the industry market in Israel is not an easy one. Sometimes you feel that it's impossible have a sustainable industry in Israel. I want to emphasize that without industry, there is no Israel. We are doing the best we can to restore and expand the industry market, because we, Israelis, have what no other country in the world has – the Israeli creative mind. The Israeli engineers who are leaving here today are the best engineers in the world, and they have the ability to contribute their talents for the sake of the industry and for a better future for Israel."





Scientist's Night at SCE "Humankind in 2050"



SCE has opened its gates to the residents of the area, for an afternoon of events and diverse scientific activities for adults, youths and children.

The event took place on 19/9/2017, with the participation of hundreds of curious guests of all ages.

Scientists' Night is an open event for the general public, held each year at research institutions and science museums throughout the country, in conjunction with the Ministry of Science and Technology and the European Union. Its aim is to expose science and scientific work to the public through a variety of lectures, workshops, activities and tours, and meetings with scientists.

This year, Scientists' Night was about "Mankind in 2050": what does the future hold for us, and how would today's technology affect our future? What would medicine be like in the future – would robots operate on us? What planets would we inhabit? Would we live in homes built by 3D-printers and eat printed food?

Various activities were held around the campus – cinema, art and game complexes, theatre shows, scientific experiments, escape rooms, enrichment lectures, soap bubble complexes and

many other enriching activities.

This year, too, SCE continued to have successful collaborations: at Ashdod campus with Marom Center and at Beer-Sheva campus with "Scientific Leadership" and with Carasso Science Park, which held enriching and enjoyable activities.

According to Prof. Amir Eliezer, "Scientists' Night is a fascinating event and an excellent opportunity to discover the world of science and enjoy a unique experience."

When Engineering Meets Toys

Collaboration between SCE and Carasso Science Park produced an interactive toy exhibition.

Students of the Product Design track in the Mechanical Engineering Department presented an interactive exhibition of engineering toys at Carasso Science Park in Beer-Sheva, as part of a unique project.

The toys, which demonstrate scientific principles and are designated to be prototypes of educational toys, were designed and constructed under the instruction of Zuk Turbovich, the course coordinator, and with the accompaniment of Prof. Iko Avital and the designers Ilan Elkart and Assaf Hazan.

In order to study and understand the target audience, the students visited kindergartens and interviewed their nephews and the children of their friends and neighbors. They gathered their impressions of the way the children played with the toys and learned what the children were interested in, what size of toy they preferred, and their ability to contain the product at different age groups.

Some of the toys constructed by the students were designed to teach the transition from rotary to linear motion, or the conversion of potential energy into kinetic energy and spring power. Some toys teach the Bernoulli principle, which deals with the power of lift, and some utilize hydraulic forces.

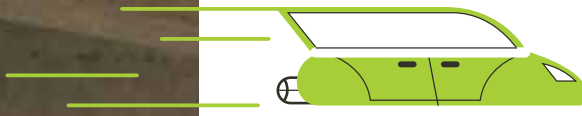
Dr. Gedalia Mazor, Head of the Mechanical Engineering Department, has pointed out that the toy project allowed the students to experience the work methods of an industrial engineer, including learning the customer's needs, adapting the product to those needs and thinking creatively. Apart from those, the students experienced social activity that coincided with the College values. Some of the toys were donated to kindergartens in Beer-Sheva, and some will be donated to the regular display at Carasso Science Park in Beer-Sheva.

"The toys are not meant to teach the children directly; they get them to

experience scientific principles when operating them," said the course coordinator, Zuk Turbovich. "For example, they are required to upload a weight with a pulley and then release it at the right height in order to dismantle a brick house. Through experiencing the height differences and the intensity of the blow, they experience and internalize principles of forces and potential energy."

"Usually, in the course of academic engineering studies, the students are required to design only engineering products," Turbovich explained, "but in the toy project, the challenge is double, because the students have to take into account the user's experience as well, with the user being, in this case, a child with a complex inner world."





Industrial and
Management
Engineering



Software
Engineering



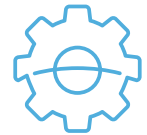
Electrical and
Electronics
Engineering



Construction
Engineering



Chemical
Engineering



Mechanical
Engineering

