

NEWS FOR A BETTER WORLD

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SCE is proud to launch:
**Bachelor Degree in
Computer Sciences**

SCE
SHAMOON COLLEGE OF ENGINEERING

What is new?

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Editor: Talya Gersh

Editorial staff: Shay Shabtay, Liron Ohayon, Marina Grinshpon, Deborah Corem, Yasmin Shmuel

Language editor: Naama Dotan

Graphic design: Raveh-Peleg Studio

Photographs: Kanar Productions

Address: 56 Bialik St., Beer-Sheva

amart@sce.ac.il | www.sce.ac.il

FROM THE PRESIDENT'S DESK



Spring semester is almost here, and despite the successful transition to online teaching and finding advanced technological solutions, I hope that the college campuses will soon, once again, resume their vibrancy and fill up with new and veteran students. We are facing varied challenges and important tasks, and therefore are continuing to invest immense effort in research and quality teaching, and in connecting with advanced industries in Israel. The college maintains cooperation and research relations with leading academic institutions in Israel and worldwide and continuously acts to expand them to enable professional and research progression for staff members, and to provide students with a quality learning environment, that enriches their personal and professional worlds in many ways.

It is well known that during the twenty years of its existence SCE has trained over 11,000 graduates in Bachelor and Master degrees. Over recent years, a graduates' association has been established, envisioning the graduates as an integral part of the college and its future. Several weeks ago, I had the pleasure of participating on one of the meetings held by the association, and was excited to meet among the hundreds of graduates, entrepreneurs that had established their own companies, researchers that have continued studies in leading institutions in Israel and worldwide, and engineers that have taken on positions in desirable work places.

I wish you all great success in your studies.

Sincerely,

Prof. Semyon Levitsky
President of SCE

NEW AT SCE! A PROGRAM FOR BACHELOR DEGREE STUDIES IN COMPUTER SCIENCES

The new curriculum will commence during the 2022-2023 scholastic year and will provide an answer to the accelerated development of Israel's southern region as an advanced hi-tech zone

The Council for Higher Education has approved the opening of a new Bachelor Degree (B.Sc.) course of studies in computer sciences at SCE. Prof. Shlomo Greenberg will head the program, which will commence

in the 2022-2023 scholastic year.

Computer sciences is one of the most sought-after professions in Israel, and those occupied in the field lead the income table on the Israeli economy. The objective of the program is to train graduates in the field of computer sciences and provide an answer to the needs of the developing hi-tech industry in the southern region of Israel.

The program will award graduates a varied toolbox of core courses in computer sciences: data sciences, cyber and software. Faculty graduates will be able to join the academic world and continue on to advanced degrees.

Prof. Yehuda Hadad, SCE rector: "The new curriculum will provide an answer to the accelerated development

occurring in the south of the country as a region of advanced hi-tech industries and research centers, and will enable specialization in one of the most coveted fields, which will only continue to develop over the coming years. It will offer an important solution to the needs of the Negev, the Beer Sheba Hi-tech Park, the transfer of IDF bases to the south and to Beer Sheba becoming Israel's cyber capital, and of course will make quality higher education accessible to the younger generation of the Negev and in general, which will open the way to a successful and satisfying career".

*Degree subject to CHE approval



FROM THE RECTOR'S DESK



The last semester was filled with health challenges, yet I am pleased to say that we are continuing to innovate and grow.

At the beginning of this newsletter, you can read about the opening of the computer sciences department. The new department will train skilled graduates in the field and will provide an answer to the developing hi-tech industries, start-ups, hubs and technological parks. There is a continued shortage in Israel of thousands of software and data security graduates, and the demand for skilled computer science trainees with cyber know-how is continually increasing.

We are in the throes of planning and raising funds to establish a new campus in Ashdod, near to the Assuta Hospital and Ad Halom train station in the south of the city. At the same time, we are working on the expansion and development of new courses suitable for the region's requirements.

A research center for computational optics was recently inaugurated, which will allow the performance of studies and developments of advanced hardware and algorithmics for spectral and polarimeter imaging, and will provide our students with an opportunity to experience a quality learning environment and will enrich their personal and professional worlds in many ways.

To the hundreds of new students joining us in the spring semester, I wish a successful and easy integration into the fabric of life and learning at SCE.

With warm regards,

Prof. Jehuda Haddad
Rector

Innovative solutions to environmental and sustainability challenges

As part of the Entrepreneurship & Innovation Center GreenTech Hackathon, a variety of ideas to handle waste, recycling, energy saving and more, were presented.

Every semester the SCE Entrepreneurship & Innovation Center selects a focal subject that challenges the students to study it and present innovative engineering solutions.

The first semester of 2021-2022 focused on environmental and sustainability issues. The climate crisis is the most significant global challenge facing humanity today. Recently the Innovation Authority and the PLANETech community presented a report which shows that 10% of the hi-tech companies established in Israel in the past year are developing technologies in these fields.

During December 2021 the Entrepreneurship & Innovation Center conducted a GreenTech hackathon, encouraging students to propose technological solutions to climate and general environmental challenges.

The opening lecture was presented by Uriel Keller, CEO of PLANETech. He showed a map of the challenges facing the climate crisis and the vision of the community contending with these issues – turning Israel into a world center for innovative technologies that want to take on the challenges of the changing climate and to participate in the effort to reduce greenhouse gas emissions and adaptation to these climate changes. These technologies deal with the climate, energy, food, agriculture, water and more.

The hackathon participants suggested a variety of ideas to reduce and handle waste, for recycling and energy saving. Some of the interesting projects presented included:

A plastic recycling room – shortening the time it takes for plastic to disintegrate and return it to nature as organic waste (Adi Abuhaseera and Paz Malul)

Smart Trash Can – equipped with IA technology, innovative sensors and weight gage and designed to reduce wasteful consumption and assist in the recycling process by issuing warnings on how to recycle (Omri Biton, Ronny Grekarov, Erel Bobli, Roie Putterman, Lea Brodesky).

Hi-Charging – Wireless charging of cars with solar electricity.



GREEN TECH HACKATHON

Engineering innovation for the environmental crisis
| Guest speaker: Mr. Uriel Keller, PLANETech CEO



DRAINAGE AUTHORITY CONVENTION

The convention focused on a master plan for draining the Shikma-Besor rivers.



Last December SCE hosted the Drainage Authority Convention, which focused on the drainage of the Shikma-Besor rivers. Lectures and discussions were held, designed to enrich and deepen the search for appropriate environmental solutions.

The convention was held in conjunction with the Ministry of Agriculture, Afik Engineering and AGMA (the Center for Drainage Basins and Rivers), and with the participation of Pini Badash – Chairman of the Drainage Authority and Head of the Omer Local Council; Prof. Yehuda Hadad – SCE Rector; Eran Ettinger – Manager of Environmental Resources Management at the Ministry of Agriculture, and others.

Will the Traffic Police Take on the Challenge?

An adapter between the infusion rack and the walker, developed by students of mechanical engineering from the Ashdod Campus, will also allow patients who are using a walker to move around independently and safely

There is at least one fatal accident in Israel on an almost daily basis. Many efforts are invested to reduce the number of accidents through propaganda and enforcements, but in fact – the human resource limitations and restricted means, make it almost impossible to monitor the roads.

Dan Marinesko and Yariv Edri, present day graduates of the Software Engineering Department on the Ashdod Campus, decided to try and resolve the issue of enforcement as part of their final project. They developed a system using artificial intelligence that recognizes offenses that are currently unenforceable using electronic means. Under the guidance of Dr. Tamar Sharut they developed STOP – an innovative technology for enforcing traffic offenses using the analysis of video signals from cameras in real time. The system can be connected to existing cameras located in city centers, without investing additional resources.

This is a breakthrough technological solution, as to date no use has been made of video signals from cameras in real time, without the use of sensors or detectors to enforce traffic offenses. The system recognizes incomplete stops, for a defined period of time, before stop lines. It monitors vehicles entering intersections and can identify several cars simultaneously. Once the system recognizes that a certain vehicle did not fully stop, it also identifies the license plate. Documentation of the offense is saved together with the license plate number, the date and the time, and



the data is transmitted to a database – of the police force or of the municipal center.

The STOP technology is suitable for enforcing a variety of traffic offenses, such as failure to give way to pedestrians on zebra-crossings, driving in the wrong direction, not giving way at intersections, entering a full intersection, entering an intersection from the wrong lane, etc.

According to the developers, the idea emerged when on the way to college they witnessed a traffic accident caused by failing to stop at a stop sign. “We are certain that assimilating the system can lead to significant deterrence at intersections, which will decrease the number of accidents”, they said.

Head of the Software Engineering Department at Ashdod Campus, Dr. Marina Knyazhansky, said that it is a smart system. Using artificial intelligence. “The ability to reduce the number of accidents and victims is, of course, of great social importance”.



A new technology, developed by students of the Software Engineering Department, uses artificial intelligence to recognize insubordination to “Stop” signs • The system connected to existing video cameras in the public domain and in the future will be able to recognize additional traffic offenses – without requiring the presence of policemen.

From pinball to flying-ball: SCE signs up for persons requiring rehabilitation

Students from the Mechanical Engineering Department developed innovative rehabilitative products for patients at the Levinstein Medical Center.

As part of the College's cooperation with the Levinstein Rehabilitative Medical Center in Raanana, students from the mechanical Engineering Department on Campus Ashdod were asked to design and manufacture products that combine rehabilitative training with game elements, so that the tedious rehabilitation process would become more enjoyable and improve patients' quality of life.

The results were displayed at the department projects convention attended by representatives of the medical center, who decided to integrate them as part of the occupational therapy treatments.

The products that will be assimilated at Levinstein include:

Rubber Band Board - a round board, 60cm in diameter, installed on an adjustable

stand that includes a set of various colored rubber bands with varying degrees of elasticity. The board also includes a set of stylized cards showing an assortment of shapes that can be formed by the bands, at varying degrees of difficulty. The board enables a variety of rehabilitative activities – to develop imagination and cognition, motor abilities and spatial vision.

Rehabilitative Labyrinth – an instrument the design of which was inspired by racing car steering wheels and game mazes. The goal: to get the ball to the center of the board by moving wrists and elbows. The product assists in exercising fine motor skills and cognitive abilities. It is designed for patients with wrist and elbow problems, ages 13 and over.

Goalie Pinball – A rehabilitative game that

combined elements of pinball and football to exercise cognitive abilities and motor skills through symmetrical working with both hands. The game induces movements of shoulders, elbows, wrists and grip force. There are four different colored balls on the game board, a goalie controlled by a handle, various static and moving obstacles, four goals in the colors of the balls and a spring mechanism to shoot the ball. Stretching the spring shoots a new ball from the top of the board, and the gradient moves the balls towards the player and goals. The player has to use the handle to kick the ball so that it will go through its color gate, while navigating the various obstacles spread across the board.

Sounds and Colors – a memory game that combines light and sound, designed to



assist persons with hand motor difficulties and combines motor activity with thinking and cognition. When the game is activated, lights go on in random order, and each light emits a different sound. The order the lights go on must be repeated by pulling on levers with the same color in the correct order. The body of the product was made using 3D printing and PLA material and comprises a symmetric frame suitable for two hands.

The Jingle Bells Instrument – was designed to train the triceps and biceps arm muscles, and it adds interest and

depth to the rehabilitative challenge. The instrument is constructed of a sound box hung on the wall, hiding the mechanism. Outwardly there are eight handles and ropes. Each handle produces a different sound, having an attached weight on a string that hits a bell when pulled. The instrument turns a Sisyphean arms workout into a musical game, enabling the patient to play tunes presented on cards.

The Flying Ball – is a physiotherapy machine constructed to add interest to training of the wrist, by combining a mechanism that converts the wrist action of the patient into a stream of air using bellows. The air flows through a transparent pipe causing a light weight ball to float resultant of the physical Coanda effect – the phenomenon of flow attaching to a convex surface. For as long as the patient operates the machine, the ball will remain in the air.

Head of the Planning and Product Design course at the Mechanical Engineering Department of Campus Ashdod, Avihai Shorin, states that the students developed products that will greatly improve the quality of life for persons requiring

rehabilitative processes. "I am pleased that the medical center management found the products we developed as worthy, and am particularly proud that they will actually be used in the rehabilitation of persons who require them".

According to SCE Rector, Prof. Yehuda Hadad, "The SCE students bring high level engineering knowledge and skills, but most of all creativity and thinking out of the box. The Project Oriented teaching method practiced at the College combines real world engineering tasks and enables actual acquaintance with the occupational world and the development of quality products, that have social uses and contribute to the community".

Nahman Plotnitzky, manager of the Center for Technological Adaptation at the Levinstein Medical Center: "I am grateful to the team of mentors and the students taking on the challenges we presented. The products reflect the creativity and professionalism of the students, and their inclusion in the occupational therapy rooms will contribute to significant improvement in the rehabilitation process. Thank you very much!".



Flow with nature instead of fighting it

The government has to prepare for floods and flooding and prevent the next disaster • The solutions exist – all that requires is a change in perception and a guiding government hand

Dr. Hofit Yitzhak Ben Shalom

The rains of recent years have helped to restore rivers and increase the level of the Sea of Galilee and the aquifers, however they caused floods and flooding and a taxing price in victims and destruction of infrastructures.

The meteorological center data shows that over recent years there are more rain events, alongside an increase in the force of the rains and in the distribution of the rain over time and expanse. The result: very little of the rain waters succeed in penetrating the ground and permeating it. The drainage systems are designed for much smaller runoff forces, and they are crashing and unable to withstand the load.

In January 2019, around two years ago, on a stormy winter Saturday in Tel Aviv, the late Dean Shoshani and Stav Harari were tragically killed when they took the elevator down to the parking garage to vacate their car. It was a harsh and painful tragedy that cost the lives of two young people, an unnecessary disaster that could have been prevented. The failures were many, but the major issue was the municipal drainage problem, which was a known factor that still remains.



Handling infrastructures, particularly in low lying urban areas, such as the Hatikva neighborhood (which is topographically lower than its surrounding areas) is a must. There are proven engineering solutions – and all that is required is a conceptual change and strong guidance from a government that will know how to weave the policies and budgets.

Floods are a global problem. In New York, for example, a variety of solutions have been created to absorb the heavy rainfall, and in Copenhagen areas have been designed for collecting rainwater in green sidewalks, parks and green islands. With a little creativity and technology, it is possible to find solutions that will fit every roundabout, square or roadside.

In recent years, the Israeli government decided to promote the issue of infrastructures and to manage the danger of floods. The government decision instructs the relevant government ministries to take action in multiple ways to improve Israel's readiness for flooding events. To date there is sufficient know-how and tools, in Israel and worldwide, to assist us in taking advantage of the runoff in cities, where the built-up areas prevent

the rainwater from permeating the earth, and to take advantage of them for us – in order to manage water resources in winter and to also prevent the next disaster. As said, budgets are required to execute these programs.

For example, the solution of capturing the water above the drainage basin, usually by reservoirs, will also allow restoration of rivers, create domestic tourism and use water for watering municipal parks. Another solution is to plan small green areas (roundabouts, traffic islands). This method is focused and requires many green corners to be able to control all the runoff.

It is important to remember that the cement canals increase the flow force of the water and the damages they cause, whereas nature has a wonderful and effective way of dealing with rains. Contrary to drain pipes and closed canals, which are limited in water containment and drainage ability, the natural structure of rivers enables differing quantities of water to be collected and flow through them. Therefore, it is necessary to know how to take advantage of nature, and not fight it.

Water is a resource in shortage, and is irreplaceable. The climate crisis and global warming are creating a renewed opportunity to build a responsible world ecologically and socially. It is time to change the approach, literally, and to “flow” with nature. The planning, engineering and technological know-how are already here – it is simply a matter of priorities.

Dr. Hofit Yitzhak Ben Shalom is a lecturer and researcher on the climate crisis, sustainability and green building at SCE.

A new research center for computational optics was inaugurated at the Beer Sheba Campus

Dr. Isaac August, from the Electrical and Electronic Engineering Department and the Physics Unit, will head the center

A research center for computational optics was recently inaugurated on the College's Beer Sheba Campus. The ceremony was attended by the College Management, staff members and researchers from various academic institutions.

Establishment of the research center will enable SCE researchers to perform studies and developments of hardware and advanced algorithmics for spectral and polarimeter imaging. In addition to academic research, the results of the various studies have a variety of options in the commercial field: security systems, military and police, biometric systems, biomedical systems, autonomous vehicles, the food industry and agriculture, and more. Students performing their research at the center will be able to integrate into a variety of positions.

The center will be headed by Dr. Isaac August, from the Electrical and Electronic Engineering Department and the Physics Unit at the College. Dr. August grew up and was educated in Beer Sheba, and already in elementary school won the Electricity for the Negev prize and the Natural Sciences Competition. “My attraction to the sciences was realized when studying physics at the Ben Gurion University, and after competing my bachelor degree, I went on to study electrical engineering. I completed my master degree cum laude and continued

onto to doctorate studies, during the course of which I was invited to be a guest scientist at MIT by Prof. George Barbastathis, and then for two post doctorate studies at the Electrical Engineering and the Materials Engineering departments, including a visit to Zweibrücken University in Germany”.

Dr. August has published many academic articles, including in the prestigious Scientific Reports journal published by Nature, has appeared at many conventions around the world and even registered a patent in the USA, Europe and Israel. The technology is already commercialized.

“I always thought that the academic and application aspects should be combined and cooperate with relevant industries”, he says. His field of research is electro-optics.

Dr. August speaks about his sources of inspiration: “From a very young age, my late father used to bring me magnets, coils, motors and various gages and explain the principles of their operation. During the

course of my first-degree studies, I met the late Prof. Gideon Erez, from whom I learned curiosity and the ability to see the connection between the theoretical and analytical and the material and applicative worlds”.

One of the studies he dreams of doing is in the field of early detection of cancer cells – and here again the memory of his father comes in to play: “Early detection is in many cases the key to saving life. My late father died of cancer during his forties. I would like to succeed in developing an optic system that could contribute to the field of early detection”.

With all his experience, before every lecture Dr. August goes over the learning material and always thinks of new and improved ways of teaching. “I try to simplify problems that arose in previous lessons and also combine results of MATLAB simulations, which every student can also change and operate on their computers”.



The end to running around: A unified and secured medical file with the help of Blockchain

Blockchain technology will enable authorized medical factors to enter a personal medical file, read and input documents and data • Due to the high deployment, medical files will be very secure

Shai Idan and Harel Jerbi, software engineering students on the Ashdod Campus, presented a breakthrough final project under the mentorship of Dr. Hadassah Delatroff. The project deals in providing all medical factors with the possibility of entering a personal medical file, reading it and inputting documents and data, while the file has maximum security using the blockchain technology.

"Whoever at any time received any medical treatment that was not via their health fund knows how exhausting the process is", Shai Idan explains the rationale behind the project. Shai (age 27, from Ahisamakh Village), together with his fellow student of software engineering at the Ashdod Campus, Harel Jerbi (age 29, from Yavne), presented their final project at the department's Projects Convention, which is designed to facilitate receivers of medical treatment in Israel.

The project included research and display by establishing a deployed network, based on Blockchain technology, that will enable unification of medical files into a single file, for everyone. In this manner, a person receiving treatment will no longer be required to bring documents, CT scans, X-rays, etc., to hospitals, emergency clinics and health funds in order to update the treatment in the medical file. All providers of medical services will be able to input the details of the visit, and these will all combine into one file – accessible to the patient and the doctor at the press of a

button.

"Our aspiration was to facilitate the lives of patients concerning their medical files"

"The idea arose in each of us from our encounters with the problematic situation at present", says Shai. "During my wife's pregnancy, we visited several doctors and performed tests. Each time we were sent back to the health fund doctor with documents in hand, so that the medical file could be updated. I thought that this was something that should be changed". "I also experienced the same frustration", adds Harel, "as someone who does a lot of sport, I have been sent very often for x-rays, and each time I returned to the family doctor with a disc".

"Our aspiration was to facilitate the lives of patients concerning their medical files", says Shai, "so that everyone can visit any medical provider and authorize their access to their medical file. Each provider can input the new details and also update the medical history".

In order to create this file, the duo created a blockchain network, where medical organizations are the "miners", who add blocks to the chain through the system listening to existing medical systems. This technology is extremely secure: because of the high deployment, whoever wants to change data has to take over 51% of the computers on which it operates, which makes the action impossible for as long as more and more computers are added to the network.

"In order to encourage as many medical



factors and computers to become part of the network and allow it to listen to their internal system, we proposed that the reward usually practiced by "mining" Blockchain networks will enable medical systems to pay state institutions, or alternatively to share anonymous data for research purposes, which will advance the medical world", explains Harel. "The project is only at its beginnings, because it requires the construction of an entire world of concepts, but we believe in it. We have already received much praise and interest wherever we have presented it".

And your choice to study software engineering?

"I always knew I wanted to study software engineering and to be occupied in writing code", says Shai. Harel, on the other hand, explains that the choice was accompanied by contemplation: "I have been dealing with computers from a young age, and as a child, the question of What do you want to be when you grow up? was always answered by: a soccer player or computer programmer – but when it came to choosing studies, it seemed natural to apply for construction engineering, because it is the field my family is in. I met Shai at the preparatory studies, and he was sure about what he wanted to study. I began researching the subject together with him, and even though I feared I did not have sufficient background, I realized eventually that it was my choice".

Dr. Hadassah Delatroff, head of the Communications and Cyber Course at the Ashdod Campus: Shai and Harel presented an excellent project, that wonderfully applies the knowledge acquired during learning: algorithmics, architecture design and code application. In the summer the project was presented at an international convention and was highly praised. It is exciting to engineer together with our students the future technology of the medical and financial worlds".

"Learning Centrality by Learning to Route"

How to invent new centrality indexes without investing know-how, effort and time?

The use of centrality indexes is widespread and includes among others the identification of influencers on social networks, locating central infrastructure intersections on the Internet or municipal network, recognizing super-spreaders of diseases, etc.

- When we do not have centrality indexes for a specific task, we can use new architecture to learn new centrality indexes automatically and precisely.

Aviad Elishar, Computer Sciences Department

Centrality indexes are one of the major and most popular tools in the field of Network Science. These are various estimates that rate peaks according to their position on the graph. The use of centrality indexes is widespread and includes identifying influencers on social networks, locating central infrastructure intersections on the Internet or municipal network, recognizing super-spreaders of contagious diseases, analysing various nervous networks, etc.

However, what can we do if we do not have a centrality index available for a specific task? In such case, researchers will invent a new centrality index, that will take into account the unique conditions for the given task. However, such invention requires know-how in a certain field, as well as the investment of much time. As a result, automatic learning of an arbitrary centrality index is necessary and vital.

Instead of inventing a new unique centrality index each time, researchers Aviad Elishar from the Computer Sciences Department at SCE, Dr. Rami Pozis from the Software and Data Systems Engineering Department at the Ben Gurion University in the Negev, and master degree student, Liav Nachar, proposed an innovative architecture that would learn new centralizing indexes by deep learning. The architecture proposed is based on the concept according to which RBC (Routing Betweenness Centrality) enables generalization of many centrality indexes though information on the flow routes of data on the given network.

In their article Learning Centrality by Learning to Route, which was presented at the Complex Networks 2021 convention, the researcher presented the architecture's ability to learn several different centrality indexes. Results showed that the proposed architecture succeeded in learning centrality indexes more precisely than the previously proposed algorithms.

“Each Day Brings New Challenges”

Just before the residents of new neighborhoods enter their homes, Oz Edelstein, Development and Infrastructure Engineer and SCE graduate, makes sure to execute the infrastructure plans that will serve the residents

Oz Edelstein, a development and infrastructures engineer at the Menashe Rasoli Civil Engineering Company Ltd, is in charge of a variety of projects that are performed prior to the inhabiting of new neighborhoods. Oz completed his Civil Engineering studies at the Ashdod Campus three years ago, but even before completing his studies he began working for the company, and participated in projects of neighborhood development in Ashkelon, Ma'ale Ephraim and Beit El. “I work as a supervisor and project manager and am very happy with my work”, he says. “Every day brings along many new and interesting challenges”.

The challenges Oz is referring to include the management of a large and complex



setup of execution factors, supervision factors and quality control, including sub-contractors and foremen for road works, development, cementing, electricity and lighting, panoramic work, gardening and irrigation. There are sometimes special occurrences, such as discovering antiquities in an area that was planned for a main road. “It happened when we were building a residential neighborhood in

Beit El and it was a significant challenge. There is no disputing the importance of discovering antiquities, at the same time – every delay in regional development can delay the building of the neighborhood, which is of national priority” explains Oz.

The Menashe Rasoli (1996) Company has extensive experience in planning and building procedures of construction and development projects, including the establishment of infrastructures for residential neighborhoods. Highly knowledgeable supervisors and project managers enable the company to participate in Ministry of Housing projects. “I interviewed with the company during my third year of studies, The person who interviewed me was also an SCE graduate,

who was familiar with the College strengths, which was for me a huge advantage”.

I always felt that there was someone at the college who heard me and took care to direct me towards success, even when things weren't clear for me. The fact that today I am a supervisor in a large company executing projects of constructing neighborhoods, is a huge success as far as I am concerned”, says Oz. “Creating parks, building bridges, support walls for highways and infrastructure works for electricity, water, sewage and drainage – all these are part of the field, where the end result is to make things good for the neighborhood residents”.

Despite the many challenges at work, Oz does not neglect his family life, “I have an amazing daughter, six months old, and I try to be at home to help as much as possible. The great advantage of this position is that alongside the great responsibility, I also have time to spend with my family”.

“A degree in Industrial Engineering and Management allows freedom and creativity in senior positions”

Shiran Elmelem Ohaion, a first- and second-degree graduate of SCE in industrial engineering management, and today a quality engineer at the Haifa Negev Technologies plant, talks about the responsibility and creativity required in the field – including an original and exciting solution she found for the problem of street cats roaming around the plant



that endanger the cats. Moreover, they are hungry, weak and suffer from the oppressive heat in summer and the freezing cold in winter”, she says.

Shiran approached the plant management and proposed a solution, that was widely supported and praised. The company published advertisements offering up the cats for adoption by families. Cats that were requested were taken by the plant workers to the vet for treatment that was funded by Haifa Group, and then sent to their new homes.

Since the beginning of the project scores of cats have been adopted and it has become renowned. Many plants have approached Shiran asking to imitate the idea.

Shiran came to Haifa Negev technologies after completing her first- and second-degree studies in industrial engineering and management at the SCE Beer Sheba campus. The Haifa Group is a leading company with worldwide renown in the fields of agriculture, and Shiran says that her work is challenging and exciting. “I am very pleased with my position as manager of quality control”, she says. “It is a very interesting position, with great responsibility for product quality throughout the production process and in the supporting departments; responsibility that is critical to maintaining the company's

reputation”.

According to her, the position requires a lot of creative thinking. “It allows me to deal with quality control from many aspects. I work with all the factors in the plant that are connected to product quality, I examine, check and instruct as well. I make sure to find the problems and to try and resolve them. My studies at the college, which combined a lot of practicality alongside the theory, contributed to my progression. The lecturers had vast experience in the industry and made sure to create appropriate simulations and to take us out on visits to leading companies”.

Shiran says that she came to SCE following recommendations from friends, who spoke of the warm attitude and level of learning. “Already during the first semester I realized that everything I had heard was true. The lecturers and department heads take care of every student throughout their journey”.

An Exciting Reunion for SCE graduates

The event was designed to strengthen ties between graduates, among others in order to promote networking and collaborations – to facilitate their integration into the industry

Hundreds of SCE graduates came for a special reunion at the Beer Sheba Campus, organized by the College Graduates Organization. The event included a networking meeting, designed to strengthen ties between the graduates to promote collaborations and facilitate integration of new graduates into the industry.

The Graduates Organization was established by the College over recent years, when it recognized the importance of reinforcing its ties with its graduates and between the graduates themselves.

The graduates enjoyed an inspiring lecture by Tal Friedman: “What I learned from my daughter”. Tal spoke about his moving personal story as father to his daughter, who suffers from autism and impaired mental capacity.

Among the event participants we met Tal Drucker, a first-degree graduate in chemical engineering, who currently works at the Makhteshim Company in R&D. Tal said: “I was excited to meet friends from when we were students, and who I have not seen in a long time. And of course, the lecturers and staff that accompanied me. Evenings such as this contribute so much to interpersonal relationships, and the possibility of connecting with graduates from different departments can help us all in our professional lives.

The organization of the evening was excellent! Thank you to the college for establishing the Graduates Organization and for keeping in touch even after completing our studies”.



Academia Integrates Experience

As part of the joint venture between the College and the Ashdod Municipality, the Civil Engineering students went out to map buildings in the city, to appraise their risk level and input the data into an App

- Gaining practical experience while studying creates a connection between the theoretical worlds and the actual world and gives the SCE students an advantage when integrating into the industry

As part of the internship program “Academia Integrates Experience” by the teaching Promotion Center and the Career Development Center at the Dean of Students, students from the Civil Engineering department at the Ashdod Campus went out to survey buildings in the older quarters of Ashdod.

The students, members of the “Engineering Project” course for 3rd year students, are participating in a joint venture between the College and the Ashdod Municipality, as part of the program designed to integrate students into work in the industry during their studies and enable them to acquire practical experience alongside their theoretical studies.

Participants in the venture received a list of addresses and were asked to map the buildings at risk in the city and to appraise the degree of risk. The data was fed into

an application, developed especially for the program. The findings underwent professional examination by relevant factors in the authority.

The venture is new and unique in Israel – in terms of the survey size and in terms of cooperation between the students and the Ashdod Municipality. It is a social and professional venture that exposes the students to the “real world”.

Dr. Amit Kenny, a lecturer in the Engineering Project course: “The students were serious about the project and learned a great deal about various construction methods and building maintenance, and how all these are expressed in the structure over the years. Students that in the future will be planners, will avoid including hazardous items in their plans, and those who will execute will be meticulous about details that in the future may become weak points

in structure maintenance”.

Mordechai Ben Aderet, a student in the course: “Exposure to the field contributed, as far as I am concerned, to completing a big portion of the picture. I came with a lot of previous knowledge, but most of it was theoretical. It is different when things become tangible. In addition to the physical exposure, lectures were given on different structure contents and that created a connection between the theoretical world and the practical world”.

Students wishing to gain practical experience in their field of studies are invited to join the Academia Integrates Experience program. You are invited to refer to the Career Development Center:

Beer Sheba Campus – zoharza@sce.ac.il

Ashdod Campus: noasa2@sce.ac.il



“I Already Feel at Home”

“I am here because of the level of learning and the student life”: introducing Nadav Kliner, 1st year student in the new Architecture Department



When the academic school year of 2021-2022 commenced, the change in the streets of Beer Sheba was quickly noticeable. After two years in which many students opted to remain living with their parents in remote cities, many returned to the city and began to visit the recreational and entertainment sites.

This is the time to launch a new item in our newsletter, where we will introduce a student and learn about their student life experience. This time we are introducing Nadav Kliner.

How old are you?

“24”.

Where from?

“Originally from Tel Aviv. Now I live in Neighborhood B of the city”.

What are you studying?

“I have started my 1st year in the new SCE architecture department”.

What attracted you to come here?

“I have always been attracted to studying architecture. I have always enjoyed seeing well designed and planned buildings, and I decided that is what I want to do. It is a profession with enormous possibilities for development and self-expression. After hearing about the new department opened by the college, I decided I wanted to study here. I know that many think there is certain risk in learning in a new department, that has not yet sent

graduates out into the industry, but after comparing the curriculums of various institutions in Israel, and even more so after having met the lecturers over the initial months of learning, I am certain it is one of the better choices I have made. Studies are very high level, and the student life in Beer Sheba is another important advantage”.

What is your impression of Beer Sheba, the city?

“I think that the choice to study here was very good. The city has an excellent vibe of a vibrant and involved student community. You can sense the community everywhere and there is a wonderful integration of students throughout the town. I have been living here only a short while, and already feel at home. I have many more places to get to know, but lucky for me architecture studies are not short, and over the five years I will have enough time”.

Where do you hang out?

“In the first month I visited Barshuk and Bar Roots on Ringelbloom, and of course you can't miss the student parties. The atmosphere at the places I visited was cosy and warm and I really enjoyed it”.

What is your drink?

“Beer, of course. And if there is Hobgoblin, well need I say more...”

And food?

“I love meat of all kinds and flavors, and pasta. I love cooking at home, but already know that I must visit the ‘Sifria’. I heard that on Sundays they offer hamburgers and beer all you can eat”.

How are you on social media?

“In general, I don't write posts every day, I like to scroll randomly and not go in depth. Instagram is therefore ideal for me”.

Favorite series or movie?

“Everything Marvel. The world they created is amazing, and I am curious to see how it develops”.

Single?

“Yes”.

What's the dating scene like in Beer Sheba?

“I have only been here a short while, so I don't really go on dates. But there is a sense in the air that while you are studying you will find the love of your life. It's a bit funny, because there really is no pressure, but there is a sense in the air that meetings and getting acquainted is a big thing – at the places of entertainment, on the social media, in Apps”.

Your ideal partner?

“Someone to laugh with, to have fun together. I think that is the secret to a long relationship”.

Students from the new department met a fascinating mosaic of hi-tech people, curators and artists – and returned determined to take part in the varied and exciting activity that was uncovered



Jerusalem first: the first study trip by the department of Visual Communication

The first group of students in the department of visual communication went on their first field trip during the semester – which was appropriately held at the cultural and industrial centers of Jerusalem, the capital city. The study trip included an introduction to concepts and work styles, that in the classroom would have remained only abstract ideas.

The tour began at Givat Ram, at the Israeli start-up Lightrix, which is developing an application for the editing and designing of pictures and movies for the smartphone. We continued to the artists studios in Talpiot – an enclosure that offers artists and creators of visual arts a rich and fertile work environment. The location houses

studio spaces for artists living in Jerusalem, a gallery for changing exhibitions, visits by curators, open lectures to the public and an international program for foreign artists based on collaborations with institutions in Israel and around the world.

We continued from there to the Hansen House in the Talbia neighborhood, which was once a leper hospital and now is a design, media and technology center. It is an historical building, surrounding by a green garden and orange groves, established at the end of the 1900s outside of the city in order to distance and isolate those ill with leprosy. Up until 2002 the place was active as an outpatient clinic, and 2009 saw the opening of the first

historical exhibition “Behind the Wall”.

The final visit was to an impressive, colorful and surprising place, operated by a group of artists. The story of “The Factory” begins in 2016, when the “Empty House” group invaded a derelict historical building in the heart of Jerusalem, renovated it and turned it into a center of art and culture which constitutes a single, ongoing and large work of art: the ceilings, walls and even floors are a huge puzzle of paintings, shapes and images, placed one over the other and covering every vacant space. The place is open to visitors and houses a café and common work spaces. It allows graduates of art academies in Jerusalem to remain in the city and contribute to the

variegated and vibrant art scene. Foreign artists also come to work in the space, and enrich the artistic dialogue.

The trip was a great success. It provided participants with a glimpse of the many ways in which to apply design practices, to see things you can only meet in the field and to meet with hi-tech people, artists and curators, who were happy to share their works and thoughts. The students returned with the sense of having found an entire world of varied design activities, that is attractive and exciting, and in which they are determined to take part

The Course that teaches the Design Secrets of Language

In a world of infinite data, visual images become one of the most important tools for conveying messages * The course on “The Foundations of Typography”, taught in the Visual Communication Department, teaches how to use language as a tool for creating visual images that attract the eye and stimulate the desire to delve into the text and the message

Many of us make the mistake of thinking that the written content is the only thing that carries the messages that we, as readers, must decipher. But in an era, such as ours, which is saturated with messages, images and content, it is easy to lose the message the writer intended to convey.

We are all familiar with the movement of turning pages or endless scrolling we have become accustomed to, as a result of the enormous quantities of information that are transmitted through the social networks and all types of media. There are professionals whose principal job is to convey messages in the form of visual images to attract us to linger over them. Among others, an entire practice known as Typography constitutes an integral part of the fascinating world of visual communication, and deals with language and letters.

“Visual communication begins the moment our eyes make visual contact with any object they come across. We live in an era flooded with images from a myriad of content worlds and endless visual stimuli, but eventually – the fact that the leading communication contact today is through visual contact, specialization in that becomes one of the most important tools for conveying messages”, says Noa Segal, a lecturer in the course “The foundation of typography – letter, word, sentence” in the new Visual Communications Department at the

College.

In Noa’s course you learn about the visual appearance of the shape and form of letters, their design and the order that causes the data consumer to stop and take an interest in the object in front. “It can be the letter in a directive sign that is visually designed to mediate the content of the place, the wrapping of a product that will arouse the buyer’s curiosity and cause them to check it out, every site or application that we use on a daily basis and up to advertisements, that include an additional variety of images, when the form in which the words are organized corresponds with the other elements that stimulate the eye”, Noa details.

The students of the course are required to learn how letters were formed, to understand the significance of the various fonts, and to aspire to create a visual image that uses language as a tool. This use of language, as a visual image that attracts the eye and stimulates the reader and viewer to delve into the text and the entire visual image, becomes more and more significant.



Academic Staff



Prof. Shlomo Greenberg Head of the Computer Sciences Department

As a native of Beer Sheba, I studied for all my academic degrees at the Ben Gurion University of the Negev, in the Electrical Engineering and Computers Department. During all of my professional life I have

enjoyed combining academia with the industry, with the intent of materializing research results into practicality.

I have loved electronics and computers from an early age, and already in high school I built a radio based on tubes – the pre-transistor era – as part of a youth course in electronics. After completing my first-degree studies, I decided to remain in Beer Sheba – the only one out of hundreds of graduates! I worked as an electronics and control engineer at the Makhteshim South factory, and afterwards for over two decades at the Nuclear Research Center, and later on as a member of the Ben Gurion University staff, in the communications department and the electrical engineering and computers department.

Around two years ago the then president of the college, Prof. Yehuda Hadad, came to me and in his special way asked me

to consider joining the college staff and establishing a department for computer sciences. I was charmed by the possibility of creating something new and making a difference, while providing an answer to an increasing demand for computer science graduates, particularly with the move of the IDF development centers to the Negev region. The program recently received CHE approval, and it will open during the 2022-2023 scholastic year.

I am happily married to Rachel, father to Nadav, Sagit and Nurit and a proud grandfather to Matan, Ido and Alma, who I love above all. During my leisure time I play the saxophone for the Nissim Alshech Wind Instruments Orchestra, and enjoy watching football games and cheering for my always favorite team – Hapoel Beer Sheba.

I wish us all success and a fruitful absorption year.

Administrative Staff



Lilach Madar Head of the Student Support Center on the Ashdod Campus

A resident of Rehovot, married to Yatir (a lawyer by profession), mother to Tchelet (9), Orian (5.5) and Iyar (1.8).

I grew up in the Mizrah neighborhood of Rishon LeZion, in a home full of girls (with four sisters) that encouraged us to be independent. From a young age I would help at home with

whatever I could. At the same time, I dreamed of successes and achievements. I realized that to succeed I need to study, and I invested all of my efforts in that.

I completed first degree studies cum laude in psychology and multi-disciplinary studies in economics and business management at the Ben Gurion University. I continued directly on to a second degree in learning disabilities, diagnosis and therapy at the Tel Aviv University, graduating cum laude.

Seven years ago, I came to the dean of students at the college, and was appointed to a new position at the support center.

At present I am responsible for the personal support services to students and assist students with various needs, that require assistance during their studies, to enable them to fulfil their abilities. These are students with learning disabilities, medical needs, sensory impairments, and so on. I offer a variety of personal support services such as psychological services, workshops, personal guidance to improve learning techniques

and increase the effectiveness of the learning processes. I believe that often a change in how we code information can change the entire experience.

I enjoy my work with the students, and am happy to combine my professional know-how with the interpersonal relations formed with the students.

I regard my role at the dean of students as contributing to fulfilling the vision of the college, which among others, is designed to make engineering studies accessible to residents in the southern periphery. As part of the support center, I promote accessibility to all populations with special needs and disabilities, alongside maintaining a high academic level.

I am happy to learn the life stories of our wonderful students and to adapt the type and scope of assistance required. Their successes fill me with great satisfaction.

I genuinely believe that “Success is the sum of small efforts, repeated day-in and day-out” (Robert Collier).

Academic Staff



Prof. Elen Solomon

Prof. Elen Solomon, a founder of the Software Engineering Department at SCE, in a conversation on a magnificent academic and professional career – from New York of the mid-twentieth century to transmitting hybrid lessons in computational statistics via Zoom - at the age of 81!

“Our students are smart and work hard, and with the support and encouragement they receive – they will be excellent engineers. At the project conventions I see final works of the next century. The staff ‘opens their eyes’ to the most modern and futuristic ideas – and they rise to the challenge”.

It is always nice to hear optimistic words on the future of the college graduates; but when these are said by Prof. Alan Solomon – the most veteran of the college academic staff, and who has an enormous history of extraordinary professional and academic achievements – they take on a deeper significance.

Prof. Solomon’s exceptional career was hard to envision. He completed his first-degree studies in mathematics at CCNY (City College of New York) somewhere back in the mid last century, as a poor Jewish youth. During his third year of studies, he met the distinguished mathematician Jesse Douglas, who was a lecturer at the college. “Douglas won international recognition, among others due to his solution to the plateau problem, and at the same time was accessible, generous and warm to his students”, says Prof. Solomon. “His lessons were wonderful and his door was always

open. His receiving hours were ‘at all times’, and he continues to be my role model for student-lecturer relations”.

His masters and doctorate degrees, on the subject of mathematic processing of soap bubbles, the young Alan completed at NYU, New York University, where he became closely acquainted with mathematical and physics giants such as Robert Richtmyer and Richard Courant. “Studying under them was, in some ways, like being adopted by them. Despite the halo surrounding them, they were never too busy to encourage and advance me. To meet with them on a daily basis was a very special experience”.

He studied at NYU for four years, and in 1967 immigrated to Israel. For several years he taught at the Tel Aviv University, and from there moved to the Ben Gurion University – at the time an institution at the beginning of its journey – as head of the mathematics department. “A small sojourn” in a government position pleased him greatly: “I served as assistant to the Chief Scientist for the Ministry of Transport, Emanuel Pratt, who was also one of the founders of the NRC. I learned a lot from him. We worked on several large projects, including the Ayalon Highway and the new central bus station in Tel Aviv. It was very different from my academic life. Eventually, work at all universities is similar, and there we were dealing with the country’s problems and affecting people’s lives. For me, it was a significant act of Zionism”.

“After that I was not a good Jew”, he smiles. “I returned to the USA, to the National Laboratory of the American Energy Department in Tennessee. Later on, after 11 years, I returned to Israel, and joined SCE”. Prof. Solomon was one of the founders of the Software Engineering Department at SCE, and served it until his retirement in 2014. At the same time, when he is not busy with his wife babysitting his nine grandchildren, he continues teaching. The Covid-19 crisis provided him, at his advanced age (81) with the opportunity of becoming acquainted with the hybrid curriculum. The course on

computational statistics for second degree students he teaches in class, with some of the students watching from their homes.

“Our students, particularly at this time, are eager to learn. Even when students do not succeed, they make an effort, they try. I just love them. Here they work even harder than elsewhere, and believe me when I say that – because I have met many of them over the years”.

“I look at our students, think of the future that awaits them, and simply envy them” Prof. Solomon envisions that the best

“I look at our students, think of the future that awaits them, and simply envy them”

graduates will in the future have very interesting work. “For example, everything to do with life on the moon: how to manufacture oxygen, maintaining thermal energy. In this sense, our world will be ‘bi-national’. The moon will require whatever we have in our world – communication, transportation and everything you can think of. The significance is an infinite need for software. Everything is after all connected to computers”.

“The Israeli education system of today has doors open that were not there in the past. Today everyone has the opportunity, and whoever wants to take advantage of it can get help. One of the nicest things here, at our college, is the library. It was established by professionals, and it is amazing in the possibilities it provides the students from anywhere that there is a computer. They need to take advantage of it and appreciate the lecturers – who both teach and do excellent research, and of course the institution’s management and all of the academic staff. They all care about the students!

“I look at the students of today and I envy them. They will see a world filled with challenges, and I am sure they will take the initiative and enjoy it. I am not worried about them”.

The Application that will put an end to blocking parking places of the disabled

ParkVision, an IoT based system developed by students of the Software Engineering department, recognizes the license plates of blocking cars, warns out loud in real time and sends an immediate update to the car owner

In Israel there are some 600,000 citizens that are wheelchair bound. Very often they find that someone has blocked their disabled parking spot or the area surrounding the spot and they are rendered helpless.

ParkVision – an IoT based system that recognizes blocking cars in real time, was developed to provide a solution to the distress of disabled persons. It is installed in the vehicle, at the back or on the side, and is connected to an App that sends real time warnings to the disabled person that owns the car and informs them of the block. The system identifies the license plate of the blocking car and assists in locating the owner.

The system also informs the blocking car, with the use of loudspeakers and a loudspeaker system “You are blocking a disabled car”. In event of prolonged blocking, the device will continue to call out every 30 seconds, so that passers-by will also understand that something is wrong and will be able to assist in locating the driver of the blocking car, or call the police.

Behind the development of this innovative

system are Noy Nir, age 24, a resident of Gan Yavne, and Ilan Kroter, age 26, a resident of Ashdod, both graduates of the SCE Software Engineering Department. The system they developed, under the guidance of Benny Zand of the Software Engineering Department at Ashdod Campus, was declared the outstanding final project of the department.

Noy tells of the motivation to develop the system: “We have a friend called Idan Fadloon, a student in our department, who has cerebral palsy since childhood and who often is faced with this problem. We wanted to increase awareness of this negative phenomenon of blocking disabled parking places, which causes great inconvenience and is in fact a felony, and to enable disabled persons, like Idan, protect themselves from being blocked. If blocked, the vehicle owner will be informed and can decide whether to call the police, go immediately to the car, etc.”

According to Ilan, the App documents blockages in its “history” so that the user can monitor them. The user can also determine definitions such as controlling the voice pitch



and turning off warnings.

“We hope that ParkVision will prevent the blocking of separation areas of disabled parking places and will increase awareness of the public”, say the pair. “We hope that ParkVision will assist in improving the quality of life of people with special needs”.

Head of the Software Engineering Department on Ashdod Campus, Dr. Marina Kaniezensky: “It is a vital system, with huge social importance. The multi-disciplinary training that we provide our students gives them a significant advantage in designing and developing products and innovative solutions, to the public benefit”.

Lighting Up in Purple



SCE

In tribute to the International Disabled Persons Rights Day, SCE illuminated the college buildings in purple. Last December commemorated the Promotion of Equal Occupation Opportunities for Disabled Persons Day. SCE joined in the welcome initiative by Mifal Hapais and the “Equals” site, and illuminated buildings in purple – to promote equality in occupation. SCE illuminated buildings in purple on both campuses.

The college attributes great importance in raising awareness to accessibility for persons with disabilities, and is happy to take part in this exciting initiative, which colored the country purple





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