Raising the South to the Power of STEM

The Jusidman Science Center for Youth at Ben-Gurion University of the Negev
By bringing STEM education to Israel’s underserved southern region, we break down barriers to students’ upward mobility.

In today’s knowledge-based economy, and especially in Israel – the “Startup Nation” – proficiency in Science, Technology, Engineering, and Mathematics (STEM) is the key to a promising career. But for young people in Israel’s disadvantaged southern periphery, access to quality STEM education is largely out of reach. From a shortage of trained teachers and support for STEM abilities to a lack of access to STEM resources, classes, and experiences, the Negev is Israel’s STEM desert, where a vast source of potential talent goes to waste.

Founded to help build a better future for Negev youth, the Jusidman Science Center For Youth offers students in the 7th-12th grades programs that close the STEM achievement gap and open doors to new possibilities. Through a step-by-step strategy of exposure, enrichment, research, and skill-building for the 21st century, the Jusidman Center prepares the next generation of STEM leaders and professionals for Israel – and advances an entire region’s diverse communities.

Performing Far Behind the Center

While Israel’s southern district is home to 15 percent of the country’s students in primary and secondary school, its graduates are largely absent from competitive military, academic, and professional fields.

<table>
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<tr>
<th>Region</th>
<th>High school students with top scores in matriculation exams*</th>
<th>Recruits to Unit 8200, the IDF’s elite intelligence unit**</th>
<th>Undergraduate students who complete a degree in the natural sciences***</th>
<th>Undergraduate students who complete a degree in medicine***</th>
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</thead>
<tbody>
<tr>
<td>The Central Region</td>
<td>12%</td>
<td>3.2 times the national average (Ra’anana)</td>
<td>0.46%</td>
<td>0.052%</td>
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<tr>
<td>The South</td>
<td>4%</td>
<td>3.2 times fewer than the national average (Netivot)</td>
<td>0.19%</td>
<td>0.028%</td>
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* Percentages of students who completed 12th grade.
** Among all IDF recruits, Unit 8200 is Israel’s foremost technological intelligence unit, and its veterans frequently go on to found and serve in top positions at international tech companies.
*** Percentage of all students who completed an academic degree.
Paths to Social Mobility

The Jusidman Center paves pathways to success in the military, academia, and industry. Advanced research programs with BGU faculty turn the South’s most gifted junior-high and high-school students into tomorrow’s STEM leaders, while enrichment programs on the BGU Marcus Family campus encourage all students to select a high-school science major – the first step toward joining Israel’s scientific and technological elites. Accessibility programs also provide motivated youth from disadvantaged populations with the support they need to pursue an academic degree. Finally, professional development programs strengthen the region’s high-school teachers by exposing them to state-of-the-art lab equipment and technological elites. Accessibility programs also provide motivated youth from disadvantaged populations.

Nurturing STEM Excellence

Programs for gifted students, including Odyssey in science and entrepreneurship, Alpha for advanced scientific research, Atidistim in engineering, and Lehavim in drone technology.

Exposing the World of STEM

Programs for all Negev students, including Science Days with lectures and lab experiments, Da Vinci for after-school and summer enrichment, and school field trips that focus on physics and astronomy.

Expanding Academic Access

The Bridge to Academia and Paths to Academia programs cultivate STEM talent among outstanding Bedouin and female high-school students and prepare them to pursue undergraduate STEM degrees.

Supportive Community

A pre-program summer camp at BGU builds a community of peers who encourage each other’s STEM curiosity.

Projects with Industry

Beit-Sheva Hi-tech and biotech companies such as Deutsche Telekom open their labs to students for research.

Collaborative Research

Students work directly with leading BGU researchers in their labs on real projects.

Outstanding Teachers

Prof. Adi Zitrin, an astronomer in BGU’s Department of Physics and former NASA Hubble Fellow at Caltech, challenges gifted youth.

Cultural Bridges

Jewish and Arab students take courses together, building trust, respect, and friendships along with STEM skills.

Experiential Education

Science Days take place at BGU’s Ramon Youth Physics Center, where students visit the planetarium and conduct experiments.

Public Spirit

Seminars and field trips introduce students to major challenges in Israeli society, with an emphasis on how science can help solve these problems.

Leadership Training

Older students “adopt” younger ones to offer both academic guidance and personal encouragement.

Academic Environment

Courses on the BGU campus and with the guidance of BGU undergraduates help students get comfortable with the idea of pursuing an academic degree.

Dedicated Mentors

Ameen Elmahdi, a physics teacher from the Bedouin community, shows students that pursuing STEM ambitions holds the promise of a successful career and a meaningful contribution to society.

Life Coaches

Igor Lusker z”l coached the Israeli Physics Team for more than 20 years, aiming to build not only STEM capacities but also character and commitment to a dream.

Public Spirit

Sagai Nehushtan

The Civic-Minded Scientist

After participating in the Israeli Physics Team – which won third place in the European Physics Olympiad – Sagai Nehushtan from Kibbutz Helif on the border with Gaza is volunteering at a gap-year program for individuals with cognitive disabilities. He plans to join an intelligence unit in the IDF.

Inbar Kedem

The Hi-Tech Entrepreneur

After participating in the Da Vinci after-school program for Java programming, Inbar Kedem of Kibbutz Be’eri decided to join Jusidman’s Israeli Robotics Team and to conduct advanced research in machine learning and AI at BGU. He developed a commercial licensing website for his kibbutz and today works in the drone division of Robotican, an industry leader in robotics platforms. In 2021, Inbar won the Food and Drink Industry Prize at the European Union Contest for Young Scientists and Developers.

Mahmod abu Jamah

The Community Role Model

Mahmod abu Jamah, a Bedouin student in the Bridge to Academia program, is planning to pursue an undergraduate degree in a STEM field.

Noy Visker

The IDF Intelligence Soldier

After completing the Odyssey program’s cyber track, Noy Visker – who comes from Dimona, one of Israel’s smallest and poorest cities – began her service in an elite IDF intelligence unit.
From Alpha to Tomorrow’s STEM Professionals

In the five years since its founding, the Jusidman Center has more than tripled the number of young people in the Negev it reaches, engaging nearly 12,000 primary- and secondary-school students in STEM enrichment or in a life-altering STEM experience through our more intensive programs. Of this number, nearly 600 come from the South’s disadvantaged Bedouin communities.

In the years to come, we aspire to reach thousands more students in the region and to achieve 50% representation by female students in all our programs.

Advancing Individuals to Strengthen Society

As part of a research group in the field of cyber-biosecurity, Odyssey program participant Dor Farbiash from Omer was co-author of a paper published in the prestigious journal Nature Biotechnology. Currently serving in an elite IDF intelligence unit, Dor plans to pursue an undergraduate STEM degree.

For his final research project in the Shpitzim (“Peaks”) program for youth from disadvantaged backgrounds, Ahmad Alsyed worked with fellow students to design and program a robot, the parts for which they made with a 3D printer. He went on to study mechanical engineering at BGU, making him the first member of his family to go to university.

After presenting her final project at the annual meeting of the Israeli Chemical Society, Naama Shafir, a graduate of the Alpha program, was invited by a BGU professor to join his research group. She is now a soldier in an elite IDF intelligence unit, and plans to study STEM at university.

From Underserved to Aiming High

When BGU President and plant geneticist Daniel Chamovitz was accepted to Columbia University, he knew that geographic distribution played a key role: Raised in the economically depressed steel town of Aliquippa, PA, Prof. Chamovitz was one of few students in his area to set his sights on a university degree. His awareness of both the challenges faced by and the profound potential of young people from disadvantaged communities has made him a passionate advocate for the accessibility of higher education and the believer in the power of STEM to provide life-changing opportunities.
Let’s Reprogram Their Future.

Igal Jusidman is president of the Jusidman Foundation, which partners with nonprofits, government agencies, and funders that share a belief in the power of education to strengthen Israeli society and advance its disadvantaged communities.

We invite you to join Igal and BGU in raising Israel’s South through STEM.

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Future water engineers from underprivileged backgrounds visited the World Horti Center in the Netherlands through the Meitar Shpitzim program.