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BSESS Program

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AKIAN COLLEGE *of* SCIENCE & ENGINEERING

UNDERGRADUATE PROGRAMS

The American University of Armenia is accredited by the WASC Senior College and University Commission, 1001 Marina Village Parkway, Suite 402, Alameda, CA 94501, 510.748.9001, www.wscuc.org.

V08 10/23



General Education

A BS degree from CSE consists of two components: the Major requirements and the General Education requirements. While the Major gives students depth, specialization, and career preparation, General Education gives breadth and a foundation of general knowledge, perspectives, and skills for life. Both are carefully designed components to assure that graduates are ready for life-long learning, whether in the classroom, on the job, or on their own. For more information, visit gened.aua.am.

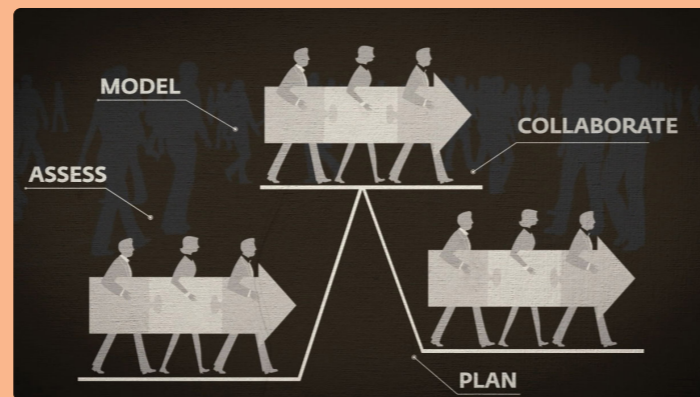
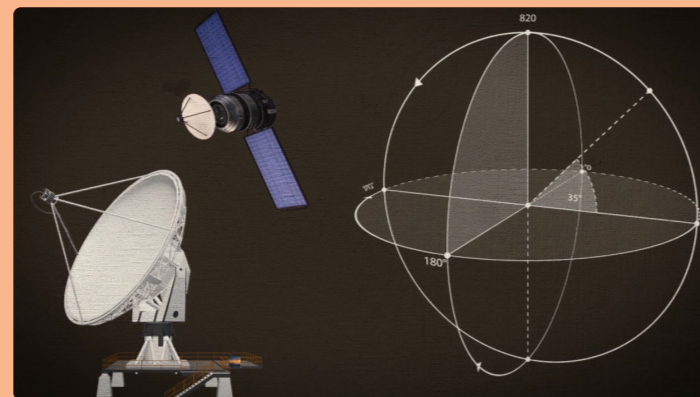
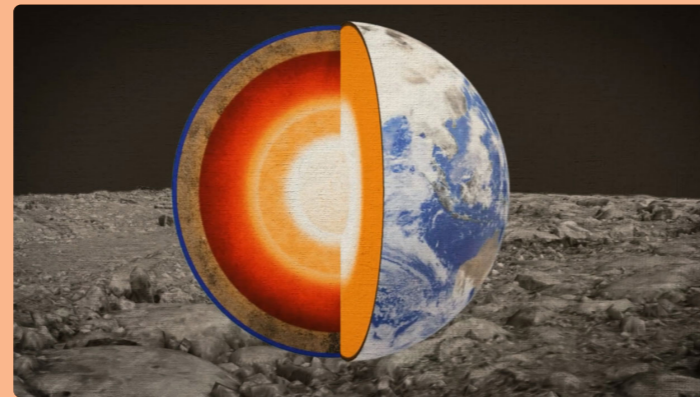
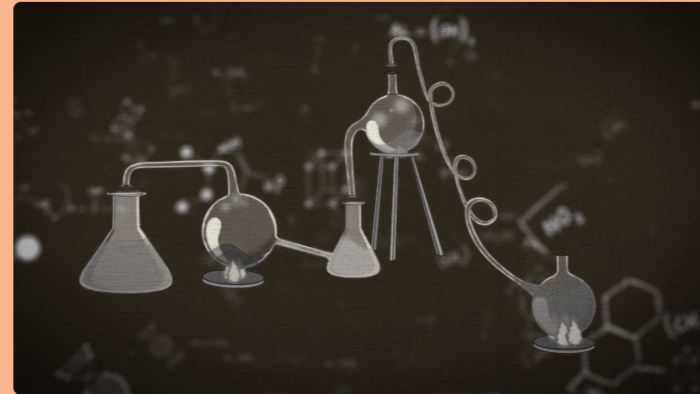


Program Need

There is an absence of academic programs in Armenia on much-needed environmental and sustainability planning and governance know-how, expertise, and innovation. This gap extends to both the planning and governance of the built as well as the natural environments. The results of this gap can be seen in the poor state of urban planning, development, and management as well as the ineffective governance of the natural environment in the country. In addition, such a gap diminishes Armenia's capacity to collaborate regionally and internationally on growing research and business opportunities related to sustainability challenges. It deprives the country of the capacity to have an informed and effective voice in regional and international debates and negotiations that impact long term national prospects. These missed opportunities leave Armenia out of economic opportunities arising from the global sustainability agenda.

What to Expect

BSESS is an interdisciplinary degree program that offers a solid foundation in environment and sustainability science. It provides training in natural sciences (biology, chemistry, and geology), spatial sciences (geography, GIS, and earth observation), and social sciences (policy and planning). It develops skills in systems thinking to assess, plan, and collaborate to address complex local and global challenges. Students will have the opportunity to take part in internships and research projects, including the large number of projects being led by the AUA Acopian Center for the Environment and other leading private, public, and international organizations.



The Zaven P. & Sonia Akian College of Science and Engineering (CSE) offers four-year undergraduate degrees that prepare well-rounded specialists who are able to think critically and creatively, learn independently, work collaboratively, and adapt quickly to challenges. Graduates emerge as lifelong learners with a wide range of experience, ready for employment in a competitive market or graduate study in a variety of fields.

BACHELOR of SCIENCE

COMPUTER SCIENCE

Connect to the Future

Computer systems power our world. From engineering to gaming, marketing to mobile technology, the complexities and opportunities are endless and constantly evolving. Students become specialists who are equipped to influence and drive the technology of tomorrow.

Why Computer Science?

This high-demand field provides challenging and exciting opportunities affecting all professions from medicine, robotics, automotive technology, finance, entertainment, and software engineering to completely new areas. A computer scientist can work in any company because all the industries are now using computers and different software solutions and they need a good expert. One of the advantages is that you can work from any remote location with your system. How to manage a team as a team leader and how to work efficiently as a team member is a part of the CS program goals.

Explore the Possibilities

CAREER OPPORTUNITIES

- Software development
- Data science
- Game development
- Mobile development
- IT startups
- Security management and cryptography
- Database specialist
- Mathematical modeling

GRADUATE STUDY OPPORTUNITIES

- Computer Science
- Applied Mathematics
- Data Engineering
- Business Administration
- Bioinformatics
- Engineering Science

What to Expect

BSCS is an interdisciplinary degree that applies the theoretical rigor of mathematics and computational methods to real-life scenarios. Courses cover a range of topics, including artificial intelligence, database management, cryptography, and computer graphics.

Students take core courses that provide a strong foundation of knowledge. Elective courses allow students to pursue one of two tracks or design their own program of specialized study to match their interests and advance their careers. In addition, the curriculum includes general education courses to develop a solid foundation of general knowledge, perspectives, and skills for life.

Pursue a general degree or concentrate on one of the two tracks:

General Degree

- Work with an advisor to select a set of computer science electives supplementing core requirements.
- Customize a study plan comprised of a diverse set of specialized computer science courses.
- Develop comprehensive and indepth skills and knowledge by focusing on computer science.

Mathematical Modeling Track

- Describe real-world systems using mathematical language and concepts.
- Explain and control systems using models, making accurate predictions about behaviors and possibilities.
- Learn to create models for everything from finance, economics, engineering, social sciences, and more.

Applied Computer Science Track

- Prepare to become a leading IT practitioner, trained by current industry leaders and professionals.
- Accomplish track requirements including Parallel and High Performance Computing, Theory of Communication Networks, Databases, and a variety of electives.

The program accentuates innovation and creativity, fostering an entrepreneurial spirit.

BACHELOR *of* SCIENCE

ENVIRONMENTAL & SUSTAINABILITY SCIENCES

Shape the Future

Program Description

The four-year undergraduate Bachelors of Science (BS) program in Environmental and Sustainability Sciences (ESS) is designed to provide students with the knowledge and skills needed to understand and address sustainability challenges facing the natural and human-made environments. The program will enable students to analyze human impacts on the planet's climate system, biodiversity, biogeochemical cycles, water resources, land systems, and more. In addition, it will enable students to focus on the sustainability of urban environments, including urban alignment with nature, mobility and energy solutions, air quality, use and disposal of water, waste and circular economy, disaster resilience, and more.

The program will equip students with knowledge and tools to work in multi-disciplinary, multi-cultural settings to begin addressing these challenges at the local, national, cross-border, and global levels.

EXPLORE the POSSIBILITIES

CAREER OPPORTUNITIES

- ESG specialist
- Green finance specialist
- Energy and water specialist
- Circular economy specialist
- Spatial planner
- Urban transportation specialist
- Sustainability analyst
- Resilience specialist
- Environmental specialist
- Energy audit specialist
- Ecopreneurs/Eco Innovators
- Life-Cycle Assessment specialist
- Carbon accounting specialist
- Materials recycling specialist
- Educator and trainer

GRADUATE STUDY OPPORTUNITIES

- Water and energy management
- Circular economy
- Waste governance
- Bioeconomy
- Transportation planning
- Urban planning and development
- Geospatial sciences and earth observation
- Biodiversity governance
- Environmental engineering
- Renewable energy technol



What *to* Expect

BSES is an interdisciplinary degree that gives students a broad background in general engineering. The program emphasizes applied for laboratory work in a variety of science, technology, engineering, and mathematics (STEM) disciplines.

What You'll Study

The program incorporates coursework in mechanical and electrical engineering, computer science, and engineering design while being strongly rooted in natural and physical sciences and mathematics.

Students will take a wide range of lecture and lab courses, including

Robotics

Electronics

Chemistry

Design

Electricity & magnetism

Computer organization

Bioinformatics

Mechatronics

And much more...



BACHELOR *of* SCIENCE

DATA SCIENCE

DATA: Driving Change, Future, *and* Success

At the crossroads of academia and industry, our data science program is designed to produce leaders ready for the challenges of the modern world. We emphasize a deep understanding of foundational principles while ensuring students are adept at applying this knowledge in real-world scenarios.

Work with the numbers and utilize massive amounts of information to maximize outputs in business, engineering, biotechnology, and any domain with big data. Develop skills across several disciplines, acquiring the knowledge and tools to obtain, track, manage, and apply data effectively. Stay a step ahead of the industry.

**EXPLORE *the*
POSSIBILITIES**

CAREER OPPORTUNITIES

- Machine Learning/Artificial Intelligence Algorithms Development
- Generative AI and Large Language Models
- Business Intelligence and Analytics
- Biotechnology, Public Health, and Pharmaceutical Industries
- Robotics, Drones/Unmanned Vehicles Development

GRADUATE STUDY OPPORTUNITIES

- Data Science
- Statistics
- Data Engineering
- Bioinformatics
- Engineering Science

My experience studying data science at AUA has armed me with a solid knowledge base, competitive skills, and access to an amazing network and career opportunities. I have had a chance to learn from the best instructors and professionals in the field, who always succeeded in providing a classroom culture where every student can freely express his/her opinion, participate in healthy discussions, develop new perspectives, and work collaboratively. I feel confident in using the academic and career benefits that AUA provided me in order to make a positive impact in the field of science and industry in Armenia, in my current job at the Armenian Bioinformatics Institute. As a proud alumna of AUA, I say for all the future generations that will take this path for their careers, AUA is a perfect starting place to grow and develop.

Susanna Avagyan, Alumna of the BS in Data Science program at AUA, from the very first cohort of data science undergraduates in Armenia.

What to Expect

BSDS is an interdisciplinary degree combining fundamentals of statistical modeling, machine learning, and computational sciences. Required core courses cover a range of topics from theoretical math and in-depth statistical methods, to computer programming and hands-on practical applications, including data visualization, machine learning and artificial intelligence. Students will choose one of two tracks of specialized study to match their interests and advance their careers.

Bioinformatics Track

Use computers and equations to sort and make sense of biological data, including genetic data. Topics of study include bioinformatics and computational biology algorithms, systems biology, functional genomics, structural modeling, and more.

Business Analytics Track

Learn how to think data-analytically and fully appreciate how data science methods support business decision making. The acquired knowledge and practical skills for business applications range from data visualization and data mining to cloud computing, data warehousing, and more.



BACHELOR of SCIENCE

ENGINEERING SCIENCES

"Learning Engineering will arm you with the necessary skills to be naturally creative and to become the architect of the future."

Arman Poghosyan, CEO, *Instigate CJSC*

Ready for the 21st Century?

The demand for engineers is increasing as our interconnected world requires innovative solutions to complex problems. Career possibilities are expanding and include emerging and cutting-edge markets. Engineers are needed in sectors ranging from technology and business to product design and conservation.

Students are encouraged to utilize the on-campus Entrepreneurship and Product Innovation Center (EPIC): a startup incubator that helps students and entrepreneurs advance their ventures from idea to success. The Center includes a state-of-the-art prototyping lab for students to invent, tinker, and explore using 3D printers, a 3D scanner, CNC machines, and more.

"Engineering is the art of transferring science into reality. It has been one of the most vital and fundamental skills for the last 5,000 years and it will remain so for the next 5,000, especially in the field of Advanced Technologies. An engineering mindset is one of the most reliable tools for building a developed society."

Karen Vardanyan, Founder,
Armath Engineering Laboratories

EXPLORE the POSSIBILITIES

CAREER OPPORTUNITIES

- Engineering & product design
- Technology management
- Robotics and mechatronics
- Technology startups
- Hardware development
- Operations and logistics

GRADUATE STUDY OPPORTUNITIES

- Electrical engineering
- Mechanical engineering
- Industrial engineering
- Computer science
- Data science
- Business administration