BAKU ENGINEERING UNIVERSITY

SOCIETY OF CHEMICAL ENGINEERS (SCHE): WHO ARE THEY AND WHAT DO THEY DO?

INTRODUCTION

In today's world, the science of engineering is one of the most vital fields aimed at the development of industry, the advancement of technology, and the implementation of new innovations. Chemical engineering lies at the heart of these processes and is considered one of the fundamental pillars of the industrial sector. One of the organizations that supports young engineers in this field and contributes to their development is the **Society of Chemical Engineers (SChE)**.

What is SChE? The **Society of Chemical Engineers (SChE)** is a professional organization that brings together students, graduates, and professionals interested in the field of chemical engineering. Its main goal is to help students studying chemical engineering acquire not only theoretical knowledge but also practical skills, to support them in building successful careers in the industry, and to foster a sense of community among engineers.

Our Team The SChE team consists of students who are passionate about chemical engineering, have innovative thinking, and aim to grow in their field. The team is divided into various functional departments, with each member performing specific roles to contribute to the overall development of the organization.

- **President and Advisory Board:** Determine the general direction of the organization, implement strategic development, and ensure that the organization progresses according to its goals.
    - *Sanan Suleymanli* – Process Engineer, SOCAR Downstream
    - *Muraz Hasanov* – President
    - *Leman Gasimova* – Process Engineer, PD&MS
    - *Samra Guliyeva* – Process Engineer, SOCAR Downstream
    - *Zeynab Yusublu* – 2023 graduate, Chemical Engineering, BMU
    - *Huseyn Maharramli* – Quality Control Inspector, STP Aluminium
- **PM Department:** Responsible for organizing seminars, training sessions, and academic projects.
    - *Ragsana Huseynova* – Vice President for Project Coordination, Group 4181i
    - *Arzu Shafiyeva* – Project Coordinator, Group 4183i
    - *Elcan Bekirzade* – Project Coordinator, Group 4182i
    - *Sahil Nabiyev* – Project Coordinator, Group 4181i
- **PR Department:** Handles the promotion of the organization, sharing of projects with the public, social media management, and event marketing.

- *Alovsat Abasov* – Vice President for Communications Coordination, Group 4182i
- *Turkan Purmukhtarlı* – Communications Coordinator, UFAZ
- *Aylin Huseynova* – Communications Coordinator, Group 4183a
- *Leyla Imani* – SMM, Group 4183i
- *Ayshan Karimli* – SMM and Content Creator, Group 4182i

As the SChE team, our goal is to prepare students for their future careers in the best way possible and to provide them with both theoretical and practical knowledge. Each of our members is an essential part of the team, and we work together to achieve greater success.

Our Activities SChE actively operates in various areas and carries out projects aimed at the development of its participants. These activities include:

1. **Trainings, Courses, and Seminars:** Organized with the participation of experienced engineers and professionals in various fields of chemical engineering, these events help students enhance their theoretical knowledge and gain valuable insights into industrial practices.
2. **Industrial Visits:** Trips to factories and facilities are organized so students can observe the real working environment and better understand the processes in chemical and process engineering.
3. **Practical Projects and Competitions:** SChE organizes projects and engineering competitions that encourage students to apply their theoretical knowledge in practice. These competitions are great opportunities for developing analytical thinking and problem-solving skills.
4. **Networking and Career Opportunities:** Various events are held to establish strong networks between students and engineers. Organization members can connect with professionals working in the industry and broaden their career prospects.
5. **Podcast:** A platform for engaging discussions on chemical engineering, industry, and innovation.
6. **Mentor-Mentee Program:** Mentorship programs organized to support the professional development of students.

OUR PROJECTS

- **Mentor-Mentee Program** SChE implements the Mentor-Mentee Program to support students in their academic and professional development. Within this program, senior students (3rd-4th year) share their academic knowledge and experience with junior students (1st-2nd year), helping them with their studies and career planning. Mentors and mentees work individually, enriching the learning and development process through mutual collaboration.
  This program has been successfully running for three years and is expanding its audience each year:
- **Mentor-Mentee I (First Edition):**
- Duration: 2 months
- Participants: 19 mentors, 30 mentees
- **Mentor-Mentee II:**
- Duration: 2 months
- Participants: 12 mentors, 20 mentees (including 2 international students)
- **Mentor-Mentee III (Latest Edition):**
- Duration: 2 months
- The number of mentors and mentees continues to grow

Through this program, mentees received support with academic challenges, were guided in developing additional skills, and were informed about career opportunities. During this period, mentors also improved their knowledge and experience by following the principle of learning through sharing.

- **Intern's Experiences** "The Intern's Experiences" is another important initiative organized by SChE. Within this project, senior students share their practical knowledge and experience with 1st-2nd-3rd year students. The aim is to ensure that young engineers gain early awareness of the industry and guide their future career choices. The project includes sharing real work experience and field knowledge, offering students opportunities for professional development.

Courses:

- **Chemical Science & Engineering School – 1**
  - **Course Title:** Introduction to Chemical Engineering
  - **Topic:** Introduction to Chemical Engineering
  - **Participants:** 20

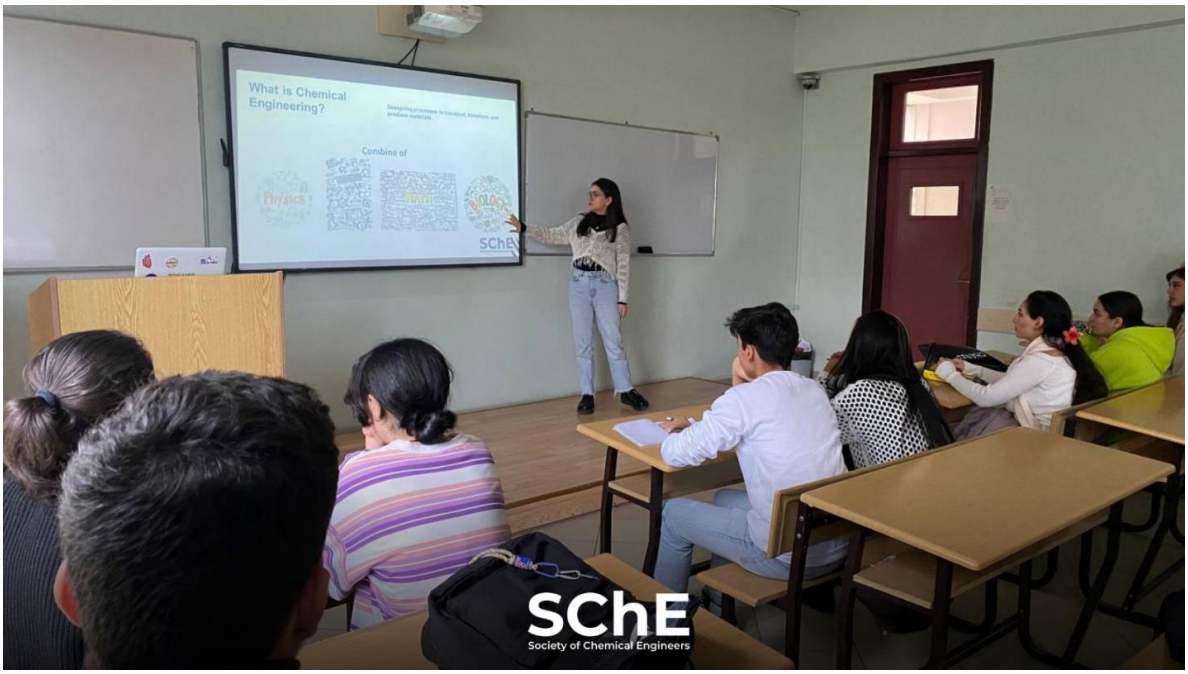
- **Assignment:** Tutorial and Project
- **Duration:** 4 weeks

- **Process Safety Fundamentals**
  - **Topics:** Industrial Safety Fundamentals, Process Safety Design, HAZOP
  - **Participants:** 41
  - **Assignment:** Tutorial and Written Exam
  - **Duration:** 4 weeks
- **ASPEN HYSYS Fundamentals**
  - **Topics:** Simulation Basics, Basic Blocks, Manipulation Blocks, Distillation
  - **Participants:** 25
  - **Assignment:** Tutorial and Project
  - **Duration:** 4 weeks
- **Basics of Chemical Engineering**
  - **Topics:** Introduction to Chemical Engineering, Thermodynamics, Mass and Heat Balance, Fluid Dynamics
  - **Participants:** 20
  - **Assignment:** Tutorial and Written Exam
  - **Duration:** 4 weeks
- **Basics of Chemical Engineering II**
  - **Topics:** Introduction to Chemical Engineering, Heat and Mass Transfer, Fluid Mechanics, Basics of Thermodynamics
  - **Participants:** 25
- **ASPEN HYSYS Fundamentals II**
  - **Topics:** Introduction to Aspen HYSYS, Unit Operations
  - **Participants:** 24
- **Project Management Mindset for Engineers**
  - **Topic:** No specific technical topic. General discussion about what project management is and its applications for engineers
  - **Participants:** 21
- **Chemical Engineering Thermodynamics**
  - **Topics:**

- Concepts of Thermodynamics & Properties of Pure Substances
- Energy Transfer by Heat, Work, and Mass
- The First Law of Thermodynamics, Energy Balance for Closed, Steady-Flow, and Unsteady Systems
- Energy Balance Practices on Engineering Devices
- The Second Law of Thermodynamics, Thermal Energy Reservoirs, Energy Conversion, Refrigerators and Heat Pumps
- Reversible and Irreversible Processes
- The Carnot Principle, Thermodynamic Temperature Scale, The Carnot Heat Engine
- Entropy, Increase of Entropy Principle, Isentropic Processes, Entropy Change of Liquids, Solids, and Gases
- Reversible Steady-Flow Work, Minimizing the Compressor Work
- Power Generation and Refrigeration

- **Participants:** 25
- **Duration:** 6 weeks
- **Assignment:** Tutorial

- **Oil Refinery Fundamentals**
  - **Topics:**
    - Initial Crude Oil Fractionation Units
    - Improving Straight-Run Gasoline Octane Number
    - Hydrotreatments
    - Sulfur Recovery
    - Thermal Cracking
    - Fluid Catalytic Cracking
  - **Participants:** 30
  - **Duration:** 6 weeks
  - **Assignment:** Quiz



SEMINARS:

- Application of Mathematics in Chemical Engineering – Günel Rzayeva
- Believe in “ME” – Jalə Zeynalı
- Style of Scientific Research – Toğrul Almənmədov
- A Step Towards Professionalism – Sənan Süleymanlı
- Energy Generation Technologies – Kənan Arif
- The Core Aspects to Get Hired – Fazla Asgarova
- Ammonia Production – Şöhrət Mirzəyev
- Process Safety – Sürət Əsgərov
- Process Drawings – Şəbnəm Rəcili
- Learn from the Experts – Sənan Süleymanlı, Samir Səlimli
- Project Planning in Engineering – Kənan Kərimov
- Polymer Technology – İsmayıl Əhmədov
- How to Get Through the Hiring Process – Nisə Əbdülhəsənova
- Lessons from Industry: Bridging Theory and Practice – Mərdan Əbilzadə
- Roadmap for Energy Efficiency and Renewable Energy Sources – Pərviz Qəribzadə
- Separation Process – Taliyə Məmmədhəsənzadə

CHEMICAL ENGINEERING FORUM 2023

On December 9th, the "Chemical Engineering Forum 2023" was held at Baku Engineering University to mark the 1st anniversary of the establishment of SChE. The purpose of the forum was to bring together chemical engineers and students of chemical engineering to listen to the valuable experiences of the speakers, facilitate mutual exchange of ideas, and strengthen relationships in a friendly atmosphere.

At the beginning of the event, the achievements of SChE over the past year were presented to the guests. The main part of the forum began with the first panel titled "Diversity in Chemical Engineering." In this panel, speakers Tural S. F. Maharramov, Orkhan Karimzada, Pasha Feyzullayev, Sanan Suleymanli, and Gunel Rzayeva discussed the role of chemical engineering in various fields, touched upon CO2 emissions and renewable energy topics, and answered questions from students.

The second panel, titled "Process Engineering," followed, with speakers Baladadash Zeynalov, Merdan Abilzade, Rahib Gasımov, Natiq Akbarli, Nigar Mirzayeva, and Shohrat Mirzayev. They provided insights on the global demand for process engineers, the characteristics of a process engineer, and key points for students to focus on. Afterward, a lottery was held, and prizes were presented to randomly selected students, followed by a group photo with the engineers.

At the conclusion of the event, Sanan Suleymanli, the founder of SChE, delivered a speech and closed the forum.

FIELD TRIPS

- **SOCAR Methanol**
- **SOCAR Downstream**
- **Oil Refinery Plant**
- **SOCAR Polymer**
- **Azərsulfat LLC**
- **Azerfloat LLC**

Note: These field trips help students form an industrial perspective, observe the application of theoretical knowledge in practice, and get closely acquainted with real-life processes.

SOCIAL ACTIVITIES

- **"Quiz 1" – Intellectual Game** Number of participants: 80
- **"Chess Tournament"** Number of participants: 23
- **"Quiz 2" – Intellectual Game** Number of participants: 60

Note: During the organization of social activities, students participate voluntarily and spend pleasant and productive time together. Thanks to engineers invited from companies, students expand their network and gain insights into real working environments.

PODCASTS

- *Chemical Engineering Through the Eyes of a Teacher* – Cavanşir Salmanov
- *Chemical Engineering Abroad* – Sənan Süleymanlı
- *Process Engineering* – Rahib Qasımov
- *Chemical Engineering in Offshore* – Emil Səlimov
- *Process Engineering: Today and Tomorrow* – Natiq Əkbərli
- *Personal Branding and Soft Skills* – Fəzilə Əsgərova
- *Environment and the Future: The Importance of COP29 for Our Country* – Tural Məhərrəmov
- *Women in Engineering* – Şəbnəm Rəcili
- *COP29: Energy Solutions for a Sustainable Future* – Aqşin Yusifzadə
- *Chemistry in Azerbaijan and the USA: From Teaching to Research* (video podcast) – Yusif Abdullayev
- *Process Engineering and Safety | Why Shouldn't We Become Process Engineers?!* – Murad Cəfərov
- *Will AI Take Over the Jobs of Chemical Engineers?* – Günel Rzayeva

WHERE ARE OUR GRADUATES?

- **Günel Əzizova** ICL (UK) / SABIC (Netherlands) – Process Engineer
- **Fatimeyizəhra Nəbizadə** ICL (UK) / SOCAR Downstream – Production Engineer
- **Gülşən Haqverdiyeva** Baku Higher Oil School / BP – Process Engineer
- **Paşa Feyzullayev** TU Münster (Germany) / TESLA (Germany) – Engineer
- **Sənan Süleymanlı** TU Delft (Netherlands) / SOCAR Downstream – Process Engineer
- **Məhərrəm Bəkiroğlu** University of Lausanne (USA) / Iowa State University (USA) – PhD Candidate
- **Taleh Nuri** Politecnico di Milano (Italy) / Technimont (Italy) – Process Engineer
- **Cavid Köçərli** Baku Engineering University, Organic Chemistry / WORLEY (Abu Dhabi) – Process Engineer
- **Emil Səlimov** BP – Site Process Engineer

OUR FUTURE PLANS

1. **Cooperation with Chemical Engineering Societies of Other Universities in Azerbaijan and Organizing Joint Projects:**
    - The goal is to encourage the exchange of experience among students and professionals in chemical engineering and strengthen ties between societies of different universities. New projects and initiatives will be implemented through this collaboration. Joint discussions and events on various topics will be organized, helping both students and professionals enhance their knowledge and skills, with a particular focus on sustainability and eco-friendly technologies. Projects could include the development of environmentally safe processes and the use of renewable energy sources.
2. **Establishing a "Chemical Engineering Platform" Involving Students Studying Chemical Engineering Both in Azerbaijan and Abroad, as well as Engineers Working in Various Companies:**
    - The aim of this platform is to build strong connections between chemical engineering students and professionals globally. The platform will allow participants to share experiences, collaborate on future projects, and develop broader professional networks. Special emphasis will be placed on eco-friendly innovations and the development of sustainable chemical processes aimed at reducing environmental impact.

3. **Collaborating with Foreign Universities (e.g., TU Delft in the Netherlands, TU Berlin in Germany, etc.), Organizing Seminars by Professors, and Developing Projects in the Energy Sector:**
    - Cooperation with foreign universities will provide students and young engineers with international experience. Such partnerships will support the development of advanced energy projects focused on renewable energy sources, reducing carbon footprints, and minimizing environmental impact. Professors from these universities will conduct seminars on modern engineering topics, including clean energy technologies, waste reduction, and energy-efficient processes that contribute to improving environmental conditions.
4. **Building Connections with Engineers Working Abroad and Organizing Training Courses:**
    - By establishing connections with engineers working abroad, their knowledge and experience can be leveraged. This will increase participation in international projects, particularly those focused on eco-friendly technologies. Specialized courses and seminars will be organized for these engineers, emphasizing sustainable engineering practices, environmentally friendly technologies, and effective waste management systems. These initiatives will equip students with the skills that are in demand on the global job market, with a particular focus on environmental responsibility.
5. **Publishing a "Chemical Engineering" Journal in Azerbaijan:**
    - The purpose of this journal is to regularly publish scientific research and innovations in chemical engineering. It will serve as an important tool for tracking industry developments, showcasing the work of local and international researchers, and strengthening scientific connections among engineers. Special editions dedicated to the environmental impact of chemical engineering, sustainable processes, and green chemistry will be featured, encouraging eco-friendly research and innovation. The goal is for the journal to be recognized both locally and internationally as a leading platform for sustainable chemical engineering solutions.

ENVIRONMENTAL ASPECTS: In alignment with global trends and the growing importance of sustainable practices, the Society of Chemical Engineers (SChE) is committed to integrating environmental responsibility into all its initiatives. This includes promoting research and development in green chemistry, renewable energy, waste minimization, and reducing the carbon footprint of chemical processes.

Moving forward, SChE's activities will focus on preparing a generation of chemical engineers who are not only skilled but also environmentally conscious.

CONCLUSION: The Society of Chemical Engineers (SChE) plays a significant role in the development of students and young professionals in the field of chemical engineering. The primary mission of the organization is to provide members with practical skills, help them closely acquaint themselves with the industrial world, and support them in shaping their careers. Importantly, all activities, such as seminars, training, courses, and networking events, are increasingly focused on the environmental and sustainable aspects of chemical engineering.

Field visits and practical projects allow students not only to apply theoretical knowledge but also to gain a deeper understanding of modern technologies and processes, with a particular emphasis on sustainable and environmentally friendly practices. The application of eco-friendly solutions and technologies will be a priority at all stages of educational activities and projects organized by SChE.

SChE also actively engages members in social and intellectual activities, helping them make new connections, develop collaboration skills, and become responsible global citizens. Its expanding activities and successful projects not only increase interest in chemical engineering but also prepare youth to become more competent and environmentally responsible professionals in the future.

In the coming years, SChE's role will become even more important, as innovative thinking, sustainable development, and strong professional skills are critical in today's world. The organization will continue to make valuable contributions to the field and provide ongoing support for the development of young engineers. Its efforts represent a vital step toward advancing chemical engineering, addressing environmental challenges, and meeting the modern demands of industry.

Finally, although they are no longer active in our department, we express our deep gratitude to our former department head, Yusif Abdullayev, and the senior lecturer of the department, Cavanşir Salmanov, for their material and moral support, which they never withheld from us over the past two years.