

Bachelor of Science in Chemical Engineering

كلية العلوم والهندسة
College of Science & Engineering

جامعة حمد بن خليفة
HAMAD BIN KHALIFA UNIVERSITY



Bachelor of Science in Chemical Engineering

The Chemical Engineering program offers a comprehensive approach that blends theoretical foundations with practical applications. This equips students to tackle modern challenges in areas such as chemical processing, environmental and sustainable engineering, and materials science.

With an emphasis on collaborative education, training, research, and capacity-building, the program aims to prepare adaptable engineers, capable of meeting society's evolving needs and embracing leadership, social consciousness, integrity, and ethics.

Program mission

The Chemical Engineering program aims to:

- ▶ create the best environment possible for students, staff, and faculty to aspire to excellence, utilizing state-of-the-art teaching and research resources.
- ▶ provide students with a quality education in the fundamental principles and competencies that prepare them to become professional leaders.
- ▶ support Qatar's industry, government agencies, and the local community through targeted outreach activities, innovative consulting, and research solutions.

Program structure

The curriculum begins with a strong foundation in mathematics, physical sciences, and core chemical engineering principles, ensuring students grasp essential concepts. Students then advance to the

fundamentals and methods applicable to analyzing, developing, designing, and operating various chemical engineering systems and processes. They gain practical experience through hands-on projects, laboratory work, and industry partnerships, providing real-world insights into designing and optimizing chemical processes and materials.

The program emphasizes flexibility and interdisciplinary learning, allowing students to customize their education to align with their interests and career goals. As such, students must take two courses in one technical area and one course in the other technical area:

- ▶ Environmental and Sustainable Engineering
- ▶ Materials and Energy Engineering

These focus areas help prepare students for successful careers in fields such as renewable energy, advanced materials, and sustainable process design.

Beyond technical skills, faculty emphasize teamwork, communication, and critical thinking. Through collaborative projects, internships, and experiential learning opportunities, students will learn to approach problems from multiple perspectives and develop innovative solutions.

Curriculum

A full-time program, taught in English over four years, comprising:

- ▶ General educational courses (in humanities, history, business, and creative arts)
- ▶ Mathematics and science courses
- ▶ Core chemical engineering courses
- ▶ Core curriculum electives
- ▶ General engineering electives
- ▶ English communication electives

Learning pathways

The engineering programs at HBKU help students tailor their education through three pathways that each leverage the strengths of HBKU's research institutes, the Qatar Foundation multiversity ecosystem, and partner universities:

- ▶ **Professional Pathway:** This pathway prepares students for careers in industry. Students gain experience through internships and industry projects, including a capstone project that is evaluated with feedback from industry professionals.
- ▶ **Innovation and Research Pathway:** This pathway develops students' research skills. Students have the opportunity to work on research projects with faculty in HBKU's research institutes. They also participate in undergraduate research, attend conferences, and contribute to academic outputs.
- ▶ **Entrepreneurship Pathway:** This pathway prepares students to launch their ventures under the programs available in HBKU Ecosystems. They connect with mentors, incubators, and resources through the university and Qatar Foundation, including Qatar Science and Technology Park, to develop their ideas beyond the course curriculum and requirements.

These pathways allow students to align their education with their specific career goals. This aligns with the college's mission to prepare future leaders of the highest professional caliber, who are ready to integrate within the industry with an open mindset to spot novel solutions and create a global impact.

Program objectives and outcomes

Program educational Objectives

The graduates of the Chemical Engineering Program at HBKU will:

- ▶ be successful chemical engineers who demonstrate high ethical standards in a variety of professional careers.
- ▶ be actively involved in professional and community services.
- ▶ continue to acquire knowledge by pursuing graduate degrees and professional development.
- ▶ continue developing effective teamwork, communication, and leadership skills.

Student learning outcomes

Graduates of the Chemical Engineering Program at HBKU will have the ability to:

- ▶ identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- ▶ apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- ▶ communicate effectively with a range of audiences.
- ▶ recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- ▶ function effectively in a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- ▶ develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- ▶ acquire and apply new knowledge as needed, using appropriate learning strategies.

Study plan

The Chemical Engineering program comprises 130 credits and is designed to start with basic scientific principles in the freshman year, ensuring students master the essential concepts of chemical engineering. Following that, they progress to more advanced and specialized chemical engineering topics in their senior year.

Admission and application requirements

Applicants seeking admission to the Bachelor of Science in Chemical Engineering should have a strong high school academic record with evidence of advanced coursework in math and science. Applicants are required to take the IELTS or TOEFL exam in order to demonstrate their proficiency in the English language. Applicants are highly encouraged to take the SAT or ACT exam.

Application requirements

A completed online application form:
admissions.hbku.edu.qa

Academic transcripts

Final transcripts of all high school years (grades 10, 11, and 12) that are available at the time of application. Transcripts in languages other than Arabic or English must be accompanied by an official translation. Applicants should submit a copy of their high school transcripts as part of the online application. Applicants who are admitted to the program based on copies of or incomplete transcripts will be required to provide original transcripts upon enrollment in order to register for classes.

Standardized test results

Official copies of standardized test results must be sent directly to HBKU. Please refer to the institutional codes below:

- ▶ SAT: 7675
- ▶ TOEFL: 4981
- ▶ ACT: 7019

- ▶ IELTS: No code required. Students should ask the IELTS center where they tested to send the IELTS TRF to Hamad Bin Khalifa University.

Applicants should also submit copies of their test scores as part of the online application.

Letters of recommendation

Applicants should provide two letters of recommendation, including one from the school counselor, and one from a math or science teacher. Applicants should include their referees' names and email addresses in the online application. Referees will receive an email requesting them to complete their references.

Personal statement of interest

Applicants should submit a personal statement as part of the online application. The personal statement should explain why the student is applying for the undergraduate major in Chemical Engineering, and how this will contribute to their future goals (minimum of 300, maximum of 500 words).

Resume/Curriculum vitae

Applicants should submit their resume or CV as part of the online application, including academic and extracurricular achievements, such as honors, awards, leadership, volunteer work, athletic involvement or any other relevant activities. Applicants are highly encouraged to mention hobbies and personal talents as well.

Identification document

All applicants should submit an electronic copy of their passport as part of the online application. Nationals and Residents of Qatar should also submit their valid Qatari ID.

Student funding

For information about student funding opportunities, please visit: <https://www.qf.org.qa/education/higher-education/financial-aid>