

# BACHELOR OF CHEMICAL ENGINEERING TECHNOLOGY

## Overview

### Program Mission

Prepare graduates to be successful as technicians and engineers embracing innovation and discovery and striving for life-long learning and professional development in the field of Chemical Engineering Technology.

### Program Description

The Bachelor of Chemical Engineering Technology program provides an excellent broad education with a focused area of specialization options to cater to the global and local industries. The Bachelor of Chemical Engineering Technology curriculum covers the laws of chemistry, physics, and mathematics which form the basis of many industrial processes in areas such as energy, oil and gas, chemical processing, etc. The program prepares students for positions as engineers with the technical and managerial skills necessary to enter careers in the design, manufacturing, operation, and maintenance of chemical processes. Students will gain practical knowledge in heat and mass transfer in plants and process control design projects. The Bachelor of Chemical Engineering Technology curriculum produces high-quality engineers known for productivity, timeliness, dedication, and competence in the workplace.

Graduates typically have strengths in applied design, development, and implementation of chemical engineering systems. They have the ability to work logically, accurately and efficiently; to gather and use information effectively; and to continue enhancing their careers through lifelong learning. The program stresses the effective use of technology, information resources and engineering tools. The program instills leadership qualities based on moral and ethical principles coupled with sound and rational judgment. Finally, the program is designed to prepare interested students for graduate studies in Chemical Engineering Technology and other related areas of professional practice.

### Program Goals

1. Provide chemical engineering professionals with the technical knowledge and skills required by the industry to perform to highest level of industry standards.
2. Prepare graduates for a successful career as effective decision makers with strong communication and teamwork skills and an understanding of the global, ethical and social implications of the industry and engineering profession.
3. Prepare graduates with strong commitment and strategic mindset to lifelong learning, continuing education, and professional growth.
4. Prepare graduates with leadership qualities and commitment to contribute actively in achieving Abu Dhabi Vision 2030.

### Program Learning Outcomes

Upon graduation, a HCT graduate in Bachelor of Chemical Engineering Technology should demonstrate:

1. An ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve

broadly-defined engineering problems appropriate to the Chemical Engineering Technology.

2. An ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to the Chemical Engineering Technology.
3. An ability to apply written, oral, and graphical communication in broadly defined technical and non-technical environments; and an ability to identify and use appropriate technical literature;
4. An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes;
5. An ability to function effectively as a member as well as a leader on technical teams.
6. An ability to develop and evaluate a business plan to transform an engineering design (systems, products, services and solutions) into a business opportunity utilizing entrepreneurial skills and knowledge
7. **C1 Biotechnology and Biochemical Engineering**  
Applying principles of biotechnology and biochemical engineering to design, analyze, and optimize processes for the development of sustainable bioproducts, biopharmaceuticals, and bioenergy, with a focus on innovation, safety, and ethical responsibility.
- 7.C2 **Petroleum and Energy Engineering**  
Applying advanced principles of petroleum engineering and energy systems to design and optimize sustainable extraction, production, and utilization processes, addressing environmental, economic, and societal considerations.

Upon graduation, an HCT graduate with a Diploma of Chemical Engineering Technology should demonstrate:

- 1- An ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to Chemical Engineering
- 2- An ability to design systems, components, or processes meeting specified needs for broadly-defined engineering problems appropriate to Chemical Engineering Technology
- 3- An ability to apply written, oral, and graphical communication in broadly defined technical and non-technical environments; and an ability to identify and use appropriate technical literature
- 4- An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes
- 5- An ability to function effectively as a member as well as a leader on technical teams

## Requirements

### Completion Requirements

Bachelor of Chemical Engineering Technology

Students must successfully complete a minimum of 120 credits, including:

Code	Title	Credit Hours
	Program Core Courses	75
	Concentration Core and Elective Courses	18
	Mathematics and Science Courses	9

General Studies course	18
<b>Total Credits</b>	<b>120</b>

Students seeking the exit with a **Diploma of Chemical Engineering Technology (DCET)** degree must complete the following minimum requirements:

1. A minimum of **69 credits**, as follows:

- A minimum requirement of 42 credits in core courses including apprenticeship.
- A minimum requirement of 9 credits in Math and Science courses.
- A minimum requirement of 18 credits in General Studies, according to the General Studies breakdown and as advised in the study plan of the program.

Bachelors of Chemical Engineering Technology

Code	Title	Credit Hours
<b>Chemical Engineering Core Courses</b>		
Required Credits: 75		
EGN 1003	Engineering Workshop and Solid Modeling	3
CHE 1103	Applied Physical Chemistry	3
ELE 1253	Fundamentals of Electrical Engineering	3
EGN 1273	Applied Programming for Engineers	3
CHE 2103	Organic and Analytical Chemistry	3
CHE 2213	Chemical Engineering Principles	3
EGN 2403	Engineering Materials	3
EGN 2113	Economic and Financial Analysis for Engineers	3
CHE 2403	Chemical Heat Transfer	3
CHE 2453	Fluid Mechanics	3
CHE 2903	Sophomore Design Project	3
EGN 2213	Project Management for Engineers	3
CHE 3313	Chemical Engineering Thermodynamics	3
CHE 3323	Mass Transfer	3
CHE 3413	Unit Operation 1	3
EGN 3403	Innovation and Entrepreneurship for Engineers	3
CHE 3623	Chemical Process Control	3
CHE 3613	Chemical Reaction Engineering	3
CHE 3523	Chemical Engineering Modelling and Simulation	3
CHE 3513	Equipment and Plant Design	3
EGN 3413	Sustainable Energy and Materials	3
EGN 4816	Apprenticeship I	6
EGN 4826	Apprenticeship II	6
<b>General Studies</b>		
Required Credits: 18		
CHE 1133	Chemical Engineering Sustainability Project	3
LSC 1503	Professional Spoken Communication	3
LSC 1103	Professional Written Communication	3
EGN 2203	Introduction to Data Science	3
EGN 3113	Artificial Intelligence	3
AES 1003	Emirati Studies	3
<b>Mathematics and Sciences Courses</b>		
Required Credits: 9		

MTH 1163	Engineering Mathematics I	3
MTH 1263	Engineering Mathematics II	3
PHY 1103	Physics of Mechanics and Motion	3

Note: To graduate, students need to complete at least one concentration worth 18 credits.

Bachelor of Chemical Engineering Technology: Diploma Exit

Required Credits 69

Code	Title	Credit Hours
<b>Chemical Engineering Core Courses</b>		
Required Credits: 42		
CHE 2103	Organic and Analytical Chemistry	3
CHE 1103	Applied Physical Chemistry	3
CHE 2213	Chemical Engineering Principles	3
CHE 2403	Chemical Heat Transfer	3
EGN 1003	Engineering Workshop and Solid Modeling	3
ELE 1253	Fundamentals of Electrical Engineering	3
EGN 1273	Applied Programming for Engineers	3
EGN 2213	Project Management for Engineers	3
EGN 2113	Economic and Financial Analysis for Engineers	3
EGN 2403	Engineering Materials	3
CHE 2453	Fluid Mechanics	3
CHE 2903	Sophomore Design Project	3
EGN 2816	Apprenticeship	6
<b>Mathematics and Science Courses</b>		
Required Credits: 9		
MTH 1163	Engineering Mathematics I	3
MTH 1263	Engineering Mathematics II	3
PHY 1103	Physics of Mechanics and Motion	3
<b>General Studies Courses</b>		
Required Credits : 18		
AES 1003	Emirati Studies	3
CHE 1133	Chemical Engineering Sustainability Project	3
LSC 1503	Professional Spoken Communication	3
LSC 1103	Professional Written Communication	3
EGN 2203	Introduction to Data Science	3
EGN 3113	Artificial Intelligence	3
<b>Description</b>		<b>Data</b>
Total Required Credits		120
Maximum Duration of Study		6 years
Minimum Duration of Study		4 years
Cost Recovery Program		No
Program Code		BCHET
Major Code		CHE

## Ideal Study Plan Recommended Sequence of Study

Year 1		Credit Hours
<b>Semester 1</b>		
CHE 1133	Chemical Engineering Sustainability Project	3
MTH 1163	Engineering Mathematics I	3
EGN 1003	Engineering Workshop and Solid Modeling	3
PHY 1103	Physics of Mechanics and Motion	3
LSC 1503	Professional Spoken Communication	3
<b>Credit Hours</b>		<b>15</b>
<b>Semester 2</b>		
LSC 1103	Professional Written Communication	3
CHE 1103	Applied Physical Chemistry	3
MTH 1263	Engineering Mathematics II	3
ELE 1253	Fundamentals of Electrical Engineering	3
EGN 1273	Applied Programming for Engineers	3
<b>Credit Hours</b>		<b>15</b>
<b>Year 2</b>		
<b>Semester 3</b>		
CHE 2213	Chemical Engineering Principles	3
CHE 2103	Organic and Analytical Chemistry	3
EGN 2113	Economic and Financial Analysis for Engineers	3
EGN 2403	Engineering Materials	3
AES 1003	Emirati Studies	3
<b>Credit Hours</b>		<b>15</b>
<b>Semester 4</b>		
CHE 2403	Chemical Heat Transfer	3
CHE 2453	Fluid Mechanics	3
CHE 2903	Sophomore Design Project	3
EGN 2213	Project Management for Engineers	3
EGN 2203	Introduction to Data Science	3
<b>Credit Hours</b>		<b>15</b>
<b>Year 3</b>		
<b>Semester 5</b>		
EGN 3113	Artificial Intelligence	3
EGN 3403	Innovation and Entrepreneurship for Engineers	3
CHE 3413	Unit Operation 1	3
CHE 3313	Chemical Engineering Thermodynamics	3
CHE 3323	Mass Transfer	3
<b>Credit Hours</b>		<b>15</b>
<b>Semester 6</b>		
CHE 3623	Chemical Process Control	3
CHE 3613	Chemical Reaction Engineering	3
CHE 3523	Chemical Engineering Modelling and Simulation	3
CHE 3513	Equipment and Plant Design	3
EGN 3413	Sustainable Energy and Materials	3
<b>Credit Hours</b>		<b>15</b>
<b>Year 4</b>		
<b>Semester 7</b>		
EGN 4816	Apprenticeship I	6
CHE 4913	Chemical Capstone Design Project I	3
Concentration Core I		3
Concentration Core II		3
<b>Credit Hours</b>		<b>15</b>
<b>Semester 8</b>		
EGN 4826	Apprenticeship II	6
CHE 4923	Chemical Capstone Design Project II	3
Concentration Elective I		3

Concentration Elective II	3
<b>Credit Hours</b>	<b>15</b>
<b>Total Credit Hours</b>	<b>120</b>

### Bachelor of Chemical Engineering Technology: Diploma Exit

Year 1		Credit Hours
<b>Semester 1</b>		
CHE 1133	Chemical Engineering Sustainability Project	3
EGN 1003	Engineering Workshop and Solid Modeling	3
PHY 1103	Physics of Mechanics and Motion	3
MTH 1163	Engineering Mathematics I	3
LSC 1503	Professional Spoken Communication	3
<b>Credit Hours</b>		<b>15</b>
<b>Semester 2</b>		
ELE 1253	Fundamentals of Electrical Engineering	3
EGN 1273	Applied Programming for Engineers	3
MTH 1263	Engineering Mathematics II	3
CHE 1103	Applied Physical Chemistry	3
LSC 1103	Professional Written Communication	3
<b>Credit Hours</b>		<b>15</b>
<b>Year 2</b>		
<b>Semester 3</b>		
CHE 2103	Organic and Analytical Chemistry	3
CHE 2213	Chemical Engineering Principles	3
EGN 2403	Engineering Materials	3
EGN 2113	Economic and Financial Analysis for Engineers	3
AES 1003	Emirati Studies	3
<b>Credit Hours</b>		<b>15</b>
<b>Semester 4</b>		
CHE 2403	Chemical Heat Transfer	3
CHE 2453	Fluid Mechanics	3
CHE 2903	Sophomore Design Project	3
EGN 2213	Project Management for Engineers	3
EGN 2203	Introduction to Data Science	3
<b>Credit Hours</b>		<b>15</b>
<b>Year 3</b>		
<b>Semester 5</b>		
EGN 2816	Apprenticeship	6
EGN 3113	Artificial Intelligence	3
<b>Credit Hours</b>		<b>9</b>
<b>Total Credit Hours</b>		<b>69</b>

## Faculty and Academic Staff Abu Dhabi Men's

**Abdelsalam Efhaima**, PhD Chemical Engineering, Missouri Univ of Science &Tech, USA

**Abdul Rauf**, PhD Chemical Metallurgy, Catholic University of Leuven, Belgium

**Ahmed Elmekawy**, PhD Industrial Biotechnology, Menofia University, Egypt

**Amjad Shaikh**, PhD Chemical Engineering, University of Sheffield, UK

**Asfaw Gezae Daful**, PhD Chemical Engineering, Universitat Rovira i Virgili, Spain

**Iqra Ahangar**, PhD Chemical Engineering, IIT Delhi, India

**Marie Loidon**, PhD Organic and Bio-organic Chemistry, Sorbonne Université (Pierre and Marie Curie Campus), France

**Muhammad Waqas Anjum** , PhD Chemical Engineering, KU Leuven, Belgium,

**Shabin Mohammed**, PhD Chemical Engineering, Monash University, Australia

**Szu Szu Ling**, PhD Science Education, National University of Malaysia

### **Al Dhanna campus**

**Nicky Rahmana Putra** , PhD Chemical Engineering, Universiti Teknologi Malaysia

**Ranjith Bose**, PhD in Industrial Chemistry, Alagappa University, India

**Sathiyamoorthy Manickkam**, Masters Chemical Engineering, Bharathidasan University, India