

University of Technology, Jamaica

Mission Statement

“To positively impact Jamaica and the wider Caribbean through high quality learning opportunities, research and value-added solutions to government, industry and communities”.

University's 2025 Vision

“We are the # 1 University in the Caribbean for work-ready leaders, committed to transforming students and society through high quality teaching, research and value-added services”.

Contact Details

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YEAR 4

| Module Name | Credit Hours | Module Name | Credit Hours |
|---|--------------|--|--------------|
| Spanish for Engineers 4 | 1 | Chemical Engineering Plant Design & Economics II | 2 |
| Process Control & Dynamics I | 3 | Major Project- Design | 3 |
| Chemical Engineering Plant Design & Economics I | 2 | Chemical Engineering Elective | 3 |
| Major Project- Research | 3 | Chemical Engineering Elective | 3 |
| University Elective | 3 | | |
| Chemical Engineering Elective | 3 | | |
| Total Number of Credits: | 15 | | 11 |
| Industrial Work Experience | | | 2 |
| TOTAL NUMBER OF CREDITS: 139 | | | |

Chemical Engineering Electives (Two are to be selected)

| Module Name | Credit Hours |
|-----------------------------------|--------------|
| Air Pollution Control | 3 |
| Remediation Technology | 3 |
| Polymer Science for Engineering | 3 |
| Fermentation Technology | 3 |
| Inorganic Chemical Technology | 3 |
| Wastewater Treatment | 3 |
| Process Control & Dynamics II | 3 |
| *Maximum 20 students per elective | |

* General Course Structure is subject to periodic review within the Faculty.
Kindly consult with current Module Selection Guide

University of Technology, Jamaica

CHEMICAL ENGINEERING PROGRAMME



PROGRAMME DESCRIPTION

The Chemical and Biological Engineering programme equips students with quality education in the theory and practice of chemical and process engineering, with an emphasis in environmental engineering. The profession requires engineers to be able to apply the principles of the physical sciences and economics while considering environmental factors in the designs, implementation and operation of processes in which materials change their state, composition and/or energy content.

The programme, therefore, equips students with the necessary skills to research, develop, design and analyze chemical engineering processes. The graduates of the B.Eng. Chemical Engineering programme will also efficiently and safely design products to meet market specifications with minimum negative impact on the environment.

This course of study is delivered primarily in English, with sufficient Spanish content in order to adequately prepare graduates for effective careers in Latin America, the wider Caribbean Region and Europe. Written and spoken fluency in technical Spanish is achieved via a minimum of 18 credit hours in specialization modules taught in Spanish either at UTech, or at other accredited Spanish speaking universities

DELIVERY & METHODOLOGY

The offering of modules within the programme is based on a combination of laboratories, cap stone projects, classroom and project-based learning, self directed learning, as well as industry exposure. The general methodology is student-centred, outcomes-based learning, in which the students are presented at the start of each module with the learning objectives and are encouraged to do additional reading and research to supplement the instructional components.

CAREER OPPORTUNITIES

Graduates typically gain employment in the following areas in Jamaica:

- ◆ Environmental Engineering Consultancy
- ◆ Government Agencies (Ministry of Health, NWC, NEPA, SRC, JBI, etc)
- ◆ Bauxite/Alumina Industry
- ◆ Pharmaceutical Industry
- ◆ Sugar Refinery
- ◆ Chemical Manufacturing
- ◆ Petroleum Refinery
- ◆ Food Processing Industries
- ◆ Wastewater Treatment Plants
- ◆ Rum Distillery

PROGRAMME ASSESSMENT

A combination of analytical and laboratory work are designed to familiarize students with experimental equipment and procedures, and develop an understanding of the relationships of theory, experimental work and practices. Students are exposed to stimulation softwares currently in high demand in industries, such as: CON-TAM, COMSOL, CHEMCAD, SuperPro Design, among others. All modules are assessed using a combination of the following; assignments, projects and final examinations. Students are provided with a copy of their module outline at the beginning of each semester which includes the schedule of content delivery, assessment weightings, as well recommended text books and other learning materials.

ENTRY REQUIREMENTS

Students are admitted to the programme on the basis of CSEC achievements and approved CAPE/A-Level studies beyond the fifth form level. Students will be admitted to the Bachelor of Engineering in Chemical Engineering programme on the basis of meeting **one** of the following criteria:

1. Five (5) CSEC/GCE ordinary level passes in English Language, Mathematics, Physics a, Chemistry and one (1) other (Technical or Science related) subject PLUS three (3) GCE A-level passes in Mathematics, Physics and Chemistry (an interview may be required for grades above C) OR Six (6) CAPE Units including Physics Units I and II, Mathematics Units I and II and Chemistry Units I and II (grades I, II and III preferred)
2. Successful completion of Year One of the Diploma in Electrical or Mechanical Engineering with a minimum GPA of **3.05**
3. UTech Diploma in Engineering, or equivalent field of study (for Advanced Placement) with a minimum GPA of **2.7**(an interview may be required)
4. Associate Degree in Engineering or equivalent field of study from an approved institution (for Advanced Placement) with a minimum GPA of **2.7** (an interview may be required).

GENERAL COURSE STRUCTURE*

| YEAR 1 | | | |
|--------------------------------------|--------------|---|--------------|
| Module Name | Credit Hours | Module Name | Credit Hours |
| Academic Literacy for Undergraduates | 3 | Advanced Organic Chemistry | 4 |
| BEng Mathematics– Calculus 1 | 3 | Elementary Principles of Chemical Engineering | 4 |
| Engineering Physics 1 | 4 | Critical Thinking, Reading & Writing | 3 |
| Computers in Engineering | 4 | BEng Mathematics 2– Calculus 2 | 3 |
| Introduction of Engineering | 3 | Engineering Design Fundamentals | 3 |
| General Chemistry II | 3 | Entrepreneurship Skills | 3 |
| General Chemistry Lab | 1 | Community Service Project | 1 |
| Total Number of Credits: | 21 | | 21 |

| YEAR 2 | | | |
|--|--------------|--|--------------|
| Module Name | Credit Hours | Module Name | Credit Hours |
| Spanish for Engineers 1 | 3 | Spanish for Engineers 2 | 3 |
| Physical Chemistry | 4 | Unit Operations 3: Particle Technology | 3 |
| BEng Mathematics 3 – Differential Equation | 3 | Chemical Engineering Thermodynamics 1 | 3 |
| Chemical Reaction Engineering | 3 | Analytical Chemistry | 4 |
| Unit Operations 1- Transport Phenomena | 4 | Engineering Statistics | 3 |
| Material Science 3 with Corrosion | 3 | Unit Operations 2 | 3 |
| Total Number of Credits: | 20 | | 19 |

| YEAR 3 | | | |
|----------------------------------|--------------|---|--------------|
| Module Name | Credit Hours | Module Name | Credit Hours |
| Bioreaction Engineering | 3 | Spanish for Engineers 3 | 3 |
| Management for Engineers | 3 | Unit Operations Laboratory 1 | 1 |
| Mathematical Modeling | 3 | Chemical and Biological Process Principles | 1 |
| Unit Operations 5: Mass Transfer | 3 | Computational Methods in Chemical Engineering | 3 |
| Unit Operations 4: Heat Transfer | 3 | Chemical Engineering Elective | 3 |
| Chemical Process Safety | 3 | Unit Operations Laboratory II | 1 |
| Total Number of Credits: | 18 | | 12 |