

PROCESS TECHNOLOGY

Degree Offered: Associate in Applied Science

Credits Required: 65/66

There is a high demand for Process Technicians in the oil & gas industry and other process industries such as polymers, specialty coatings, food/beverage, energy, wastewater treatment, etc. Process Technicians work in a team who is responsible for operation and maintenance of a manufacturing plant. Process Technicians are also key members of a team who plan, analyze, and control all stages beginning with the acquisition of raw materials, conversions of these materials to useful products, and distribution of products to customers.

The Process Technology Associate in Applied Science program at CCBC is designed to prepare students for high-demand careers as process technicians and to further their education towards a four-year degree in engineering or management. The program includes nine core courses adapted from the North American Process Technology Alliance (<http://www.naptaonline.org/about.php>) curriculum and provides a broad base of math, science, computer literacy, team-worker skills, and hands-on mechanical aptitude. These courses have been adapted from time-tested and proven curricula used by students in Texas to successfully land jobs in the oil & gas industry, and other chemical manufacturing industries.

What is Process Technology? Visit : <https://www.youtube.com/watch?v=CCMc2yW2Ng8>

Curriculum - 1st Year

First Semester - 15/16 Credits

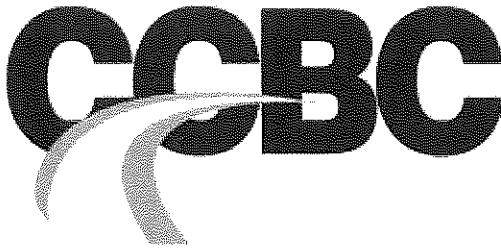
<u>Title</u>	<u>Credits</u>
Introduction to Process Technology	3
Safety, Health and Environment	3
College Algebra	3/4
Interpersonal Communication	3
English Composition I	3

Second Semester - 18 Credits

<u>Title</u>	<u>Credits</u>
Process Technology Equipment	4
Process Instrumentation I	4
Introduction to Chemistry	3
Laboratory Techniques	1

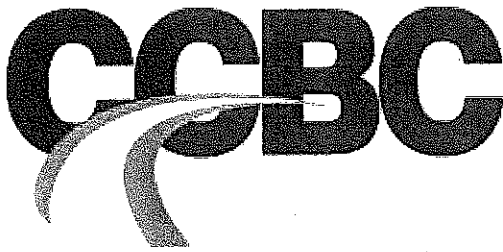


Instrumentation II	Instrumentation II builds upon the concepts of measurement and controls covered in Instrumentation I, and gives the student an introduction to switches, relays, annunciator systems, and elements of signal conversion and transmission. The course provides an overview of controllers, and control schemes such as digital control, programmable logic control and distributed control systems. The course provides the student with basics of troubleshooting process control systems.
Process Technology Systems	Process Technology Systems introduces students to the concepts of the inter-relation between equipment that are assembled to operate within a process system. The course covers the concepts underlying process systems; describes the purpose and the function of selected process systems; and concepts of mass and energy balance.
Process Technology Operations	Process Technology Operations is a capstone course of the program and introduces the students to typical operations in a process industry. This course builds on the student's knowledge of equipment, systems, instrumentation, health, environment, and safety, and , to understand the operation of an entire section of a process plant. The course covers concepts underlying commissioning, normal startup, normal operations, normal shutdown, turnarounds, and abnormal situations. Students are given an insight into the process technician's role in an operating unit.
Quality	Quality introduces the student to the typical concepts of quality underlying the operation of a process industry. The course introduces students to typical quality concepts including operating consistency, continuous improvement, plant economics, sampling, and statistical process control (SPC). The course also explores some of the more advanced concepts in process industry such as root-cause analysis, six-sigma, and Lean.
Troubleshooting	Process Troubleshooting introduces students to the concepts of identifying and finding solutions for process operating problems. The course introduces students to the process technician's role in data collection and analysis, cause-effect relationships, and reasoning.



Process Technology Course Descriptions

Introduction to Process Technology	Introduction to Process Technology is an overview of the equipment and operations in a variety of process industries. It introduces students to equipment, instrumentation, safety, quality, applications of chemistry and physics, and the roles of a process technician.
Safety, Health and Environment	Safety, Health and Environment is an overview of the health and safety hazards that a technician may encounter in the work environment, and methods used to mitigate or eliminate such a risk. The course also covers the regulations and standards that govern work-place safety, and environmental hazards. The student is also given an introduction to environmental sustainability.
Process Technology Equipment	Process Technology Equipment is an introduction to the typical equipment used in the chemical process industry. The course explains typical terminology, an overview of the structural components and functions, and operation of equipment and vessels in the process industry. This course also introduces the process technician to his or her role in safe operation and maintenance of equipment.
Instrumentation I	Instrumentation I is an introduction to typical instruments of measurement and control used in the process industry. The course describes typical process variables and the instruments used to sense, measure, transmit and control these variables. This course also discusses the concept of control loops and the fundamentals of typical control loops such as controllers, regulators and final control elements. This course also provides the student with an introduction to instrumentation diagrams and basics of troubleshooting instrumentation.



Writing for Business and Technologies	3
Introduction to Information Technology or Approved Computer Applications elective	3

Curriculum – 2nd Year

Third Semester - 18 Credits

<u>Title</u>	<u>Credits</u>
Process Instrumentation II	4
Process Technology Systems	4
Introduction to Ethics (Or Approved Humanities Elective)	3
Principles of Biochemistry	3
Physical Science	4

Fourth Semester - 14 Credits

<u>Title</u>	<u>Credits</u>
Principles of Quality	3
Process Troubleshooting	4
Process Technology Operations	4
Cultural Diversity	3
Chemical Technology Internship (option)*	

**Provides additional practical experience and aids in placement of candidate in suitable industry positions*