CHEMISTRY, ASSOCIATE IN SCIENCE

The Associate in Science in Chemistry provides a comprehensive foundation in chemistry, mathematics, and physics, preparing students for transfer to four-year institutions and careers in STEM fields. This program includes coursework in general and organic chemistry, along with essential lab skills, fostering critical thinking and problem-solving abilities. Students will be equipped with the knowledge and expertise to pursue further studies in chemistry, biochemistry, chemical engineering, and related disciplines.

Course ID	Title	Units/ Hours
Required Core Courses		
CHEM V120A	General Chemistry I	5
CHEM V120B	General Chemistry II	5
CHEM V160A	General Organic Chemistry I	5
CHEM V160B	General Organic Chemistry II	5
MATH V21A	Calculus with Analytic Geometry I	5
MATH V21B	Calculus with Analytic Geometry II	5
PHYS V04 & V04L	Mechanics for Scientists and Engineers and Mechanics Laboratory for Scientists and Engineers	5
PHYS V05 & V05L	Electricity and Magnetism for Scientists and Engineers and Electricity and Magnetism Laboratory for Scientists and Engineers	5
Required Core Units		**40**
Required Additional Courses		
Choose 1 option from the following:		
MATH V21C	Multivariable Calculus	5
PHYS V06 & V06L	Optics, Heat, and Modern Physics: For Scientists and Engineers and Optics, Heat, and Modern Physics Laboratory for Scientists and Engineers	5
Required Additional Units		**5**

Total Major Units		**45**

VCCCD General Education Pattern		
Required Major Units		45
VCCCD General Education Units		24
Double-Counted Units		(6)
Elective Units		0
Total Units for the A.S. Degree		**63**

Year 1

Fall Semester		Units/Hours
CHEM V120A	General Chemistry I (Double Counts for VC Local GE Area 5)	5
ENGL C1000	Academic Reading and Writing (Satisfies VC Local GE Area 1a)	4
MATH V21A	Calculus with Analytic Geometry I ((Double Counts for VC Local GE Area 2))	5
Select minimum 3 unit course from VC Local GE Area 7		3
	Units/Hours	**17**
Spring Semester		
CHEM V120B	General Chemistry II	5
MATH V21B	Calculus with Analytic Geometry II	5
PHYS V04	Mechanics for Scientists and Engineers	4
PHYS V04L	Mechanics Laboratory for Scientists and Engineers	1
	Units/Hours	**15**
Year 2		
Fall Semester		
CHEM V160A	General Organic Chemistry I	5
PHYS V05	Electricity and Magnetism for Scientists and Engineers	4
PHYS V05L	Electricity and Magnetism Laboratory for Scientists and Engineers	1
Select course from VC Local GE Area 1b		3
Select course from VC Local GE Area 3		3
	Units/Hours	**16**
Spring Semester		
CHEM V160B	General Organic Chemistry II	5
MATH V21C or PHYS V06 ***and*** PHYS V06L	Multivariable Calculus or Optics, Heat, and Modern Physics: For Scientists and Engineers ***and*** Optics, Heat, and Modern Physics Laboratory for Scientists and Engineers	5
Select course from VC Local GE Area 4		3
Select course from VC Local GE Area 6		3
	Units/Hours	**16**
	Total Units/Hours	**64**

Upon successful completion of this program, students will be able to:

- Design and/or conduct experiments safely according to current ACS laboratory standards to collect and analyze data and interpret its results.
- Research, read, and analyze primary scientific literature and prepare lab reports to communicate experimental results.
- Demonstrate proper use of modern laboratory instrumentation for chemical analysis and demonstrate proficiency in data collection, analysis, and safety.
- Apply fundamental chemical principles, such as atomic theory, bonding theory, equilibria, acid-base chemistry, and others to integrated problems to derive solutions.
- Effectively communicate scientific ideas and principles through problem-solving, written, and/or orally.