**102** *Science, Technology, Engineering & Mathematics Division REMOVE THIS DEGREE FROM CATALOG COMPLETELY*

**MATHEMATICS/SCIENCE**

# Chemistry Option

 *(This program is ending in 2019 and is no longer accepting students for this major.)* The Chemistry Option provides a good preparation for employment in the chemical or pharmaceutical industries. This option can also be used as a transfer program for students who plan to continue their baccalaureate education in the fields of chemistry, biochemistry, environmental science, or materials science.

*General Education Core course listings and definitions appear on pages 53-54. Additional courses may be required. The suggested sequence for full-time students is shown below. Note: To complete the degree in two years, students are advised to complete the courses in the sequence listed beginning in the fall semester.*

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| **Competency or Program Requirement** | **Course Number and Title** | Required Credits |
| **FIRST SEMESTER** |  |  |
| Continuing Learning/Information Literacy and Ethics | Choose any Continuing Learning/Information Literacy and Ethics listed | 3 |
| Critical Analysis and Logical Thinking/Written Communication | ENG\*H101 Composition | 3 |
| General Elective | Choose any credit-bearing course(s) | 1-3 |
| Quantitative Reasoning | MAT\*H172 College Algebra  | 3 |
| Scientific Knowledge and Understanding  | CHE\*H121 General Chemistry I | 4 |
| **SECOND SEMESTER** |  |  |
| Oral Communication | Choose any Oral Communication listed | 3 |
| Scientific Reasoning  | CHE\*H122 General Chemistry II (spring only) | 4 |
| Social Phenomena | Choose any Social Phenomena listed | 3 |
| Written Communication | ENG\*H102 Literature & Composition **OR** ENG\*H200 Advanced Composition **OR** ENG\*H202 Technical Writing | 3 |
| Program Requirement | MAT\*H185 Trigonometric Functions | 3 |
| **THIRD SEMESTER** |  |  |
| Aesthetic Dimensions/Written Communication | Choose any Aesthetic Dimensions/Written Communication listed | 3 |
| Program Requirement | MAT\*H254 Calculus I | 4 |
| Program Requirement | CHE\*H211 Organic Chemistry1 | 4 |
| Program Requirement | PHY\*H121 General Physics I **OR** PHY\*H221 Calculus-Based Physics I†† (for students that wish to transfer into an American Chemical Society certified program) | 4 |
| **FOURTH SEMESTER** |  |  |
| Historical Knowledge and Understanding | Choose any Historical Knowledge and Understanding listed | 3 |
| Program Requirement | MAT\*H256 Calculus II | 4 |
| Program Requirement | CHE\*H212 Organic Chemistry II1 | 4 |
| Program Requirement | PHY\*H122 General Physics II **OR** PHY\*H222 Calculus-Based Physics II2 (for students that wish to transfer into an American Chemical Society certified program) | 4 |

## Total Credits: 61-62

*Any given course may only be used to satisfy one of the competency areas even if it is listed under more than one.*

1 Not currently offered at NVCC. Course is offered at Tunxis, Gateway, WCSU, CCSU, and SCSU.

2Summer only at NVCC. Course is offered in the fall and spring at Housatonic, Gateway, Tunxis, Norwalk, WCSU, CCSU, and SCSU.

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| ***Program Outcomes*** |

*Upon successful completion of all program requirements, graduates will be able to:*

1. Understand atomic theory, chemical bonding, solution chemistry, acid-base theory, titration curves, reduction, oxidation, kinetics, thermodynamics, and nuclear chemistry.
2. Demonstrate good laboratory practice in the areas of handling gases, liquids, and solids, using vacuum pumps, heating reagents and the measurement of temperature, filtration, and distillation.
3. Be able to utilize mathematics, including calculus to solve problems in chemistry.
4. Understand organic chemistry nomenclature.
5. Understand inorganic chemistry nomenclature.
6. Perform basic organic synthesis reactions.
7. Utilize a computer to present data in a proper technical report.
8. Utilize a computer to generate graphs from data, and then interpret the graph.
9. Calibrate and operate analytical equipment.
10. Utilize material safety data sheets and safely handle hazardous materials.
11. Safely work with compressed gases.
12. Understand the scientific principles associated with electricity, the laws of motion, mechanics, light, and sound.
13. Communicate orally and in written form.