

CHEMISTRY (B.S.)

120 credits of coursework is required for the baccalaureate degree with a minimum 2.0 overall GPA, and a minimum 2.0 major GPA.

Program Requirements

| Code | Title | Credits |
|----------------------|---|------------|
| | General Education Requirements | 32 |
| | World Languages and Cultures Requirements | 3-9 |
| | Major Requirements | 69 |
| | Free Electives | 16-10 |
| Total Credits | | 120 |

Major Requirements

| Code | Title | Credits |
|---|-----------------------------------|---------|
| Chemistry Courses | | |
| CHEM 120 | General Chemistry I | 4 |
| CHEM 121 | General Chemistry II | 4 |
| CHEM 220 | Descriptive Inorganic Chemistry | 3 |
| CHEM 230 | Organic Chemistry I | 3 |
| CHEM 231 | Organic Chemistry II | 3 |
| CHEM 232 | Experimental Organic Chemistry I | 2 |
| CHEM 233 | Experimental Organic Chemistry II | 2 |
| CHEM 310 | Analytical Chemistry | 5 |
| CHEM 311 | Instrumental Analysis | 4 |
| CHEM 340 | Physical Chemistry I | 3 |
| CHEM 341 | Physical Chemistry II | 3 |
| CHEM 343 | Experimental Physical Chemistry | 2 |
| CHEM 370 | Biochemistry I | 3 |
| CHEM 372 | Experimental Biochemistry I | 2 |
| CHEM 495 | The Chemical Literature | 1 |
| Laboratory Elective | | |
| CHEM 498 | Senior Laboratory | 3 |
| or CHEM 499 | Undergraduate Research | |
| Mathematics Courses | | |
| AMAT 120 | Applied Calculus A | 4 |
| or MATH 122 | Calculus I | |
| AMAT 220 | Applied Calculus B | 4 |
| or MATH 221 | Calculus II | |
| Physics Courses | | |
| PHYS 191 | University Physics I | 4 |
| PHYS 192 | University Physics II | 4 |
| Chemistry Electives | | |
| Select two of the following: ¹ | | 6 |
| CHEM 371 | Biochemistry II | |
| CHEM 420 | Advanced Inorganic Chemistry | |
| CHEM 421 | Experimental Inorganic Chemistry | |
| CHEM 430 | Advanced Organic Chemistry | |
| CHEM 440 | Advanced Physical Chemistry | |

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|----------------------|-----------------------------|-----------|
| CHEM 490 | Special Topics in Chemistry | |
| Total Credits | | 69 |

¹ Students in the combined B.S./M.S. Chemistry program do not have to complete this requirement. They will complete graduate swing courses instead. See the combined program page for more details (<http://catalog.montclair.edu/programs/chemistry-bs-ms/>).

General Education Requirements

Click here for a list of courses that fulfill General Education categories. (<http://catalog.montclair.edu/programs/general-education-requirements-ba-bs/>)

| Code | Title | Credits |
|--|--|-----------|
| A. New Student Seminar | | |
| CHEM 190 | Freshman Seminar in Chemistry | 1 |
| C. Communication | | |
| 1. Writing | | 3 |
| 2. Literature | | 3 |
| 3. Communication | | 3 |
| D. Fine and Performing Arts | | |
| Complete a 3 credit Fine and Performing Arts course. | | 3 |
| F. Humanities | | |
| 1. Great Works and Their Influences | | 3 |
| 2. Philosophical and Religious Perspectives | | 3 |
| G. Computer Science | | |
| Complete a 3 credit Computer Science course. | | 3 |
| H. Mathematics | | |
| Fulfilled in the major. | | |
| AMAT 120 | Applied Calculus A | |
| or MATH 122 | Calculus I | |
| I. Natural Science Laboratory | | |
| CHEM 120 | General Chemistry I (Fulfilled in the major.) | |
| J. Physical Education | | |
| Complete a 1 credit Physical Education course. | | 1 |
| K. Social Science | | |
| 1. American and European History | | 3 |
| 2. Global Cultural Perspectives | | 3 |
| 3. Social Science Perspectives | | 3 |
| L. Interdisciplinary Studies | | |
| PHYS 191 | University Physics I (Fulfilled in the major.) | |
| Total Credits | | 32 |

World Languages and Cultures Requirements

Click here for a list of courses that fulfill World Languages and Cultures categories. (<http://catalog.montclair.edu/programs/world-languages-and-cultures-requirements/>)

| Code | Title | Credits |
|---|-------|---------|
| World Languages | | |
| Based on language placement exam, complete one or two sequential courses in the same language. Requirement is automatically fulfilled by language major courses. | | |

World Cultures

Requirement may be fulfilled by course selected in General Education 0-3 - Social Science: Global Cultural Perspectives. Requirement may also be fulfilled by major coursework. See list of courses.

Total Credits **3-9**

Recommended Roadmap to Degree Completion

This recommended four-year plan is provided as an outline for students to follow in order to complete their degree requirements within four years. This plan is a recommendation and students should only use it in consultation with their academic advisor.

| Course | Title | Credits |
|-------------------------|---|-----------|
| First Year | | |
| Fall | | |
| CHEM 120 | General Chemistry I | 4 |
| AMAT 120 or MATH 122 | Applied Calculus A or Calculus I | 4 |
| WRIT 105 | College Writing I | 3 |
| CMST 101 | Fundamentals of Speech: Communication Requirement | 3 |
| CHEM 190 | Freshman Seminar in Chemistry | 1 |
| Credits | | 15 |
| Spring | | |
| CHEM 121 | General Chemistry II | 4 |
| AMAT 220 or MATH 221 | Applied Calculus B or Calculus II | 4 |
| GENERAL EDUCATION (C2) | Literature | 3 |
| CSIT 100 | Introduction to Computer Concepts | 3 |
| GENERAL EDUCATION (D) | Fine and Performing Arts | 3 |
| Credits | | 17 |
| Second Year | | |
| Fall | | |
| CHEM 230 | Organic Chemistry I | 3 |
| CHEM 232 | Experimental Organic Chemistry I | 2 |
| CHEM 220 | Descriptive Inorganic Chemistry | 3 |
| PHYS 191 | University Physics I | 4 |
| GENERAL EDUCATION (F1) | Humanities – Great Works and Their Influences | 3 |
| Credits | | 15 |
| Spring | | |
| CHEM 231 | Organic Chemistry II | 3 |
| CHEM 233 | Experimental Organic Chemistry II | 2 |
| CHEM 310 | Analytical Chemistry | 5 |
| PHYS 192 | University Physics II | 4 |
| GENERAL EDUCATION (F2) | Humanities – Philosophical and Religious Perspectives | 3 |
| Credits | | 17 |
| Third Year | | |
| Fall | | |
| CHEM 370 | Biochemistry I | 3 |
| CHEM 372 | Experimental Biochemistry I | 2 |
| CHEM 340 | Physical Chemistry I | 3 |
| GENERAL EDUCATION (J) | Physical Education | 1 |
| GENERAL EDUCATION (K2) | Social Science – Global Cultural Perspectives | 3 |
| World Language 1 | | 3 |
| Credits | | 15 |
| Spring | | |
| CHEM 311 | Instrumental Analysis | 4 |
| CHEM 341 | Physical Chemistry II | 3 |
| CHEM 343 | Experimental Physical Chemistry | 2 |

| | | |
|-------------------------|--|----------------|
| GENERAL EDUCATION (K1) | Social Science – American and European History | 3 |
| GENERAL EDUCATION (K2) | Social Science – Global Cultural Perspectives | 3 |
| World Cultures | | 3 |
| Credits | | 18 |
| Fourth Year | | |
| Fall | | |
| CHEM 495 | The Chemical Literature | 1 |
| CHEM 498 or CHEM 499 | Senior Laboratory or Undergraduate Research | 3 |
| Chemistry Elective | | 2-3 |
| GENERAL EDUCATION (K3) | Social Science – Social Science Perspectives | 3 |
| Free Elective | | 3 |
| Credits | | 12-13 |
| Spring | | |
| Chemistry Elective | | 3 |
| GENERAL EDUCATION (L) | Interdisciplinary Studies | 3 |
| Free Elective | | 3 |
| Free Elective | | 3 |
| Credits | | 12 |
| Total Credits | | 121-122 |