CHEMISTRY MAJOR WITH TEACHER CERTIFICATION IN CHEMISTRY (PRESCHOOL-GRADE 12) (B.S.)

Students who wish to pursue P-12 teacher certification in Chemistry must apply to and be admitted to the Teacher Education Program. Please visit the Teacher Education Program website (http://www.montclair.edu/cehs/academics/cop) for the required professional sequence of courses and other important Program requirements, guidelines, and procedures. Students also are strongly advised to review the Teacher Education Program Handbook. Students majoring in chemistry have two teacher certification options to choose from – Physical Science or Chemistry – and should consult with an advisor to determine which certification program they wish to complete. The Teacher Education Professional Sequence Departmental Methods Course is PHED 401 Teaching of Science in Secondary Schools. (Credits are counted in the professional sequence.)

A minimum of 120 credits of coursework is required for the baccalaureate degree with a minimum 3.0 overall GPA; however more than 120 credits may be required depending upon the major field of study. Major GPA requirements differ depending on field of study. Consult the Teacher Education Program Handbook for more information.

Program Requirements

Students must complete 42 credits of General Education requirements (http://catalog.montclair.edu/undergraduate-graduate-degree-requirements/general-ed-ba-bs) and 3-9 credits of World Languages and Cultures Requirements (http://catalog.montclair.edu/undergraduate-graduate-degree-requirements/world-languages-cultures-requirement).

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>CHEM 120</td>
<td>General Chemistry I</td>
<td>4</td>
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<tr>
<td>CHEM 121</td>
<td>General Chemistry II</td>
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<tr>
<td>CHEM 230</td>
<td>Organic Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 231</td>
<td>Organic Chemistry II</td>
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</tr>
<tr>
<td>CHEM 232</td>
<td>Experimental Organic Chemistry I</td>
<td>2</td>
</tr>
<tr>
<td>CHEM 233</td>
<td>Experimental Organic Chemistry II</td>
<td>2</td>
</tr>
<tr>
<td>CHEM 310</td>
<td>Analytical Chemistry</td>
<td>5</td>
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<tr>
<td>CHEM 311</td>
<td>Instrumental Analysis</td>
<td>4</td>
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<tr>
<td>CHEM 340</td>
<td>Physical Chemistry I</td>
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<tr>
<td>CHEM 341</td>
<td>Physical Chemistry II</td>
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</tr>
<tr>
<td>CHEM 343</td>
<td>Experimental Physical Chemistry I</td>
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</tr>
<tr>
<td>CHEM 370</td>
<td>Biochemistry I</td>
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<tr>
<td>CHEM 495</td>
<td>The Chemical Literature</td>
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Chemistry Teacher Ed Elective Courses

Select 6 credits from the following with no more than 3 credits of Lab Electives:

<table>
<thead>
<tr>
<th>Code</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>CHEM 320</td>
<td>Environmental Chemical Analysis</td>
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<tr>
<td>CHEM 372</td>
<td>Experimental Biochemistry I</td>
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<tr>
<td>CHEM 373</td>
<td>Experimental Biochemistry II</td>
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Non-Lab Electives

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<tr>
<th>Code</th>
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<tr>
<td>CHEM 421</td>
<td>Experimental Inorganic Chemistry</td>
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<tr>
<td>CHEM 499</td>
<td>Undergraduate Research</td>
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Math Collaterals

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<th>Credits</th>
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<tbody>
<tr>
<td>MATH 122</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 221</td>
<td>Calculus II</td>
<td>4</td>
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Physics Collaterals

<table>
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<tbody>
<tr>
<td>PHYS 191</td>
<td>University Physics I</td>
<td>4</td>
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<tr>
<td>PHYS 192</td>
<td>University Physics II</td>
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Total Credits 61

Teacher Ed Program Requirements (P-12)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BIOL 100</td>
<td>Biological Sciences</td>
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<td>BIOL 107</td>
<td>Biology for Survival</td>
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<tr>
<td>BIOL 110</td>
<td>The Biology of Human Life</td>
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<tr>
<td>BIOL 215</td>
<td>Human Heredity</td>
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<tr>
<td>BIOL 240</td>
<td>Mammalian Anatomy and Physiology I</td>
<td></td>
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<tr>
<td>BIOL 241</td>
<td>Mammalian Anatomy and Physiology II</td>
<td></td>
</tr>
<tr>
<td>BIOL 243</td>
<td>Human Anatomy and Physiology</td>
<td></td>
</tr>
<tr>
<td>BIOL 380</td>
<td>Genetics</td>
<td></td>
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<tr>
<td>HLTBIOL 101</td>
<td>Personal Health Issues</td>
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<tr>
<td>HLTBIOL 207</td>
<td>Injury Prevention and Emergency Care</td>
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<tr>
<td>HLTBIOL 208</td>
<td>Study of Human Diseases</td>
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<tr>
<td>HLTBIOL 213</td>
<td>Perspectives on Drugs</td>
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<tr>
<td>HLTBIOL 220</td>
<td>Mental Health</td>
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<td>HLTBIOL 290</td>
<td>Human Sexuality</td>
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<tr>
<td>HLTBIOL 330</td>
<td>Health Education Methods</td>
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<tr>
<td>HLTBIOL 411</td>
<td>School Health and Community Services</td>
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<tr>
<td>HLTBIOL 430</td>
<td>Counseling Skills for Public Health Professionals</td>
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<tr>
<td>HONP 210</td>
<td>Honors Seminar in Science</td>
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<tr>
<td>HONP 211</td>
<td>Honors Seminar in Contemporary Issues in Science</td>
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<tr>
<td>NUPEC 150</td>
<td>Principles and Practice of Emergency Care</td>
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<tr>
<td>NUPEC 182</td>
<td>Nutrition: A Socioecological Perspective</td>
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Speech for Teacher Education

<table>
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<tr>
<th>Code</th>
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<tbody>
<tr>
<td>CMST 101</td>
<td>Fundamentals of Speech: Communication Requirement</td>
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Additional Teacher Ed Pre-Requisites

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<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>EDFD 200</td>
<td>Psychological Foundations of Education or PSYC 200</td>
<td>Educational Psychology</td>
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<tr>
<td>EDFD 220</td>
<td>Philosophical Orientation to Education</td>
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<td>EDFD 221</td>
<td>Historical Foundations of American Education</td>
<td>3</td>
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Select one of the following:
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>EDFD 210</td>
<td>Public Purposes of Education: Democracy and Schooling</td>
</tr>
<tr>
<td>READ 210</td>
<td>Public Purposes of Education: Democracy and Schooling</td>
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<tr>
<td>SASE 210</td>
<td>Public Purposes of Education: Democracy and Schooling</td>
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**Professional Sequence**

**Professional Sequence Courses**

Select one of the following: 3

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>SASE 305</td>
<td>Teaching for Equity and Diversity</td>
</tr>
<tr>
<td>EDFD 305</td>
<td>Teaching for Equity Diversity</td>
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<tr>
<td>READ 305</td>
<td>Teaching for Equity Diversity</td>
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Select one of the following: 1

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>SASE 312</td>
<td>Educating English Language Learners</td>
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<tr>
<td>EDFD 312</td>
<td>Educating English Language Learners</td>
</tr>
<tr>
<td>READ 312</td>
<td>Educating English Language Learners</td>
</tr>
<tr>
<td>SASE 310</td>
<td>Inclusion in Middle and Secondary Schools</td>
</tr>
<tr>
<td>READ 411</td>
<td>Language and Literacy</td>
</tr>
<tr>
<td>SASE 314</td>
<td>Assessment of Learning</td>
</tr>
<tr>
<td>SASE 316</td>
<td>Integrating Technology Across the School Curriculum</td>
</tr>
<tr>
<td>SASE 450</td>
<td>Clinical Practice I</td>
</tr>
<tr>
<td>SASE 451</td>
<td>Seminar in Inclusive Pedagogies</td>
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**Methods Course(s)**

Select one of the following according to major: 3-7

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ARED 401</td>
<td>Foundations of Methods and Curriculum in Art Education II: P-12</td>
</tr>
<tr>
<td>DNCE 402</td>
<td>Dance Methods</td>
</tr>
<tr>
<td>ENGL 471</td>
<td>Teaching English (secondary)</td>
</tr>
<tr>
<td>FREN 419</td>
<td>Teaching French in P-12: Practice</td>
</tr>
<tr>
<td>HLTH 401</td>
<td>The Teaching of Health</td>
</tr>
<tr>
<td>&amp; PEMJ 444</td>
<td>and Seminar in Physical Education</td>
</tr>
<tr>
<td>&amp; PEMJ 457</td>
<td>and Teaching of Secondary Physical Education</td>
</tr>
<tr>
<td>ITAL 419</td>
<td>The Teaching of Italian in Elementary and Secondary Schools</td>
</tr>
<tr>
<td>LATN 419</td>
<td>Methods of Teaching Latin</td>
</tr>
<tr>
<td>LNGN 403</td>
<td>Methods and Material of TESL</td>
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<tr>
<td>MATH 470</td>
<td>Teaching of Mathematics</td>
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<tr>
<td>MUED 320</td>
<td>Music Classroom Methods I</td>
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<tr>
<td>&amp; MUED 321</td>
<td>and Music Classroom Methods II</td>
</tr>
<tr>
<td>PHED 401</td>
<td>The Teaching of Science in Secondary Schools</td>
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<tr>
<td>SOSC 401</td>
<td>Methods of Teaching Social Studies</td>
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<tr>
<td>SPAN 421</td>
<td>Special Topics in Teaching Spanish K-12</td>
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**Professional Semester Courses**

<table>
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<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>SASE 452</td>
<td>Teaching for Learning II</td>
</tr>
<tr>
<td>SASE 453</td>
<td>Clinical Practice II</td>
</tr>
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</table>

**Total Credits** 49-54

1 Or pass the MSU Health Knowledge Test available through the Center of Pedagogy.