COLLEGE OF SCIENCE & MATHEMATICS
MAJOR: CHEMISTRY
ACADEMIC YEAR: 2013-2014
DEGREE TYPE: B.A. or B.S.
REQUIRED DEGREE CREDITS TO GRADUATE: 122

GENERAL EDUCATION REQUIREMENTS – 40 CREDITS

Lower Division Requirements – 37 Credits

First Year Experience (F) - 1 Credit
UNIV 189 Skills for Academic Success 1 cr
Students transferring in 24 or more credits do not need to take UNIV 189.

Communication (C) - 9 Credits
ENGL 110 College Composition I 3 cr
ENGL 120 College Composition II 3 cr
COMM 110 Fund of Public Speaking 3 cr

Quantitative Reasoning (R) - 3 Credits
MATH 165 Calculus I 4 cr

Science & Technology (S) – 10 Credits
CHEM 150/160or Principles of Chemistry I/Lab 3/1 cr
CHEM 151/161or Principles of Chemistry II/Lab 3/1 cr
PHYS 251/L University Physics I/Lab 4/1 cr

Humanities & Fine Arts (A) - 6 Credits
Select from current general education courses www.ndsu.edu/registrar/gened/

Social & Behavioral Sciences (B) - 6 Credits
Select from current general education courses www.ndsu.edu/registrar/gened/

Wellness (W) - 2 Credits
Select from current general education courses www.ndsu.edu/registrar/gened/

Cultural Diversity (D)
Select from current general education courses www.ndsu.edu/registrar/gened/

Global Perspectives (G)
Select from current general education courses www.ndsu.edu/registrar/gened/

Upper Division Requirements - Writing – 3 Credits
ENGL 321 or Writing in the Technical Professions 3 cr
324 Writing in the Sciences

Upper Division Requirements - Writing – 3 Credits

CHEMISTRY REQUIREMENTS – 42 CREDITS

Core Courses - (includes credits required for science/technology gen education)
CHEM 341 Organic Chemistry I 3 cr
CHEM 342 Organic Chemistry II 3 cr
CHEM 353 Majors Organic Chemistry I Lab 1 cr
CHEM 354 Majors Organic Chemistry II Lab 2 cr
CHEM 364 Physical Chemistry I 3 cr
CHEM 365 Physical Chemistry II 3 cr
CHEM 380 Chemistry Junior Seminar 1 cr
CHEM 431/L Analytical Chemistry I/Lab 3/2 cr
CHEM 471* Physical Chemistry Lab 2 cr
*Not required for Pre-professional and Chemistry Education Options
BIOC 460 Foundations of Biochemistry & Molecular Biology I 3 cr
BIOC 460L Foundations of Biochemistry I Lab 1 cr
CHEM 491 Senior Capstone Seminar 2 cr

CHOOSE ONE OPTION:

OPTION 1: ACS CERTIFIED CHEMISTRY - 12 Credits
CHEM 425/429 Inorganic Chemistry I/Lab 3/2 cr
CHEM 432/L Analytical Chemistry II/Lab 3/1 cr
MATH 266 Introduction to Differential Equations 3 cr

OPTION 2: ACS CERTIFIED w/BIOCHEMISTRY OPTION - 32 Credits
BIOC 461 Foundations of Biochemistry & Molecular Biology II 3 cr
BIOC 473 Methods of Biochemical Research 3 cr
BIOC 474 Methods/Recombinant DNA Technology 3 cr
BIOL 150/L General Biology I/Lab 3/1 cr
CHEM 425/429 Inorganic Chemistry I/Lab 3/2 cr
MATH 266 Introduction to Differential Equations 3 cr
MICR 350/L General Microbiology/Lab 3/2 cr
6 credits of Biology electives to be chosen from:
BIOL 315/L Genetic/Lab 3/1 cr
BOT 380 Plant Physiology 4 cr
MICR 352 General Microbiology II 3 cr
ZOO 370 Cell Biology 3 cr

OPTION 3: COATINGS & POLYMERIC MATERIALS - 27 Credits
CHEM 425/429 Inorganic Chemistry I/Lab 3/2 cr
CHEM 432/L Analytic Chemistry II/Lab 3/1 cr
CPM 473 Polymers Synthesis 3 cr
CPM 474/484 Coatings I/Lab 3/2 cr
CPM 475/485 Coatings II/Lab 3/2 cr
MATH 266 Introduction to Differential Equations 3 cr

OPTION 4: PRE-PROFESSIONAL OPTION - 23 Credits
BIOL 150/L General Biology I/Lab 3/1 cr
BIOL 220/L Human Anatomy & Physiology I/Lab 3/1 cr
BIOL 221/L Human Anatomy & Physiology II/Lab 3/1 cr
CHEM 425 Inorganic Chemistry I 3 cr
MATH 266 or Introduction to Differential Equations 3 cr
STAT 330 Introductory Statistics 3 cr
MICR 350/L General Microbiology/Lab 3/2 cr
Degree requirements continued on page two.

OPTION 5: CHEMISTRY PRE-EDUCATION - 19 Credits

Application must be made to the School of Education in order to obtain a teaching degree

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 150/L</td>
<td>General Biology/Lab</td>
<td>3/1 cr</td>
</tr>
<tr>
<td>CHEM 425</td>
<td>Inorganic Chemistry I</td>
<td>3 cr</td>
</tr>
<tr>
<td>EDUC 321</td>
<td>Introduction to Teaching</td>
<td>3 cr</td>
</tr>
<tr>
<td>EDUC 322</td>
<td>Educational Psychology</td>
<td>3 cr</td>
</tr>
<tr>
<td>MATH 266 or</td>
<td>Introduction to Differential Equations</td>
<td>3 cr</td>
</tr>
<tr>
<td>STAT 330</td>
<td>Introductory Statistics</td>
<td></td>
</tr>
<tr>
<td>PHYS</td>
<td>Elective</td>
<td>3 cr</td>
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Recommended for Education Option

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 151/L</td>
<td>General Biology II/Lab</td>
<td>3/1 cr</td>
</tr>
<tr>
<td>GEOL 105/L</td>
<td>Physical Geology/Lab</td>
<td>3/1 cr</td>
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</tbody>
</table>

RELATED REQUIRED COURSES FOR ALL OPTIONS - 13 CREDITS

<table>
<thead>
<tr>
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<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 128</td>
<td>Introduction to Linear Algebra</td>
<td>1 cr</td>
</tr>
<tr>
<td>MATH 166</td>
<td>Calculus II</td>
<td>4 cr</td>
</tr>
<tr>
<td>MATH 259</td>
<td>Multivariate Calculus</td>
<td>3 cr</td>
</tr>
<tr>
<td>PHYS 252/L</td>
<td>University Physics II/Lab</td>
<td>4/1 cr</td>
</tr>
</tbody>
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DEGREE REQUIREMENTS - UP TO 18 CREDITS TO REACH 122

DEPARTMENT AND COLLEGE REQUIREMENTS:

- Except for courses offered only as pass/fail grading, no course may be taken Pass/Fail.

Bachelor of Science (BS) Degree – An additional 6 credits in Humanities or Social Sciences*

Bachelor of Arts (BA) Degree – An additional 12 credits Humanities and Social Sciences* and proficiency at the second year level in a modern foreign language.

*Humanities and Social Sciences may be fulfilled by any course having the following prefix: ADHM, ANTH, ARCH, ART, CJ, CLAS, COMM, ECON, ENGL, FREN, GEOG, GERM, HDFS, HIST, LA, LANG, MUSC, PHIL, POLS, PSYC, RELS, SOC, SPAN, THEA, WGS, or any course from the approved list of general education courses in humanities and social sciences (general education categories A and B). These credits must come from outside the department of the student’s major.