

**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
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Science & Technology (S) – 10 Credits

CHEM	150/160or	Principles of Chemistry I/Lab	3/1 cr
	121/L	General Chemistry I/Lab	
CHEM	151/161or	Principles of Chemistry II/Lab	3/1 cr
	122/L	General Chemistry II/Lab	
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/](http://www.ndsu.edu/registrar/gened/)

Social & Behavioral Sciences (B) - 6 Credits

Select from current general education courses [www.ndsu.edu/registrar/gened/](http://www.ndsu.edu/registrar/gened/)

Wellness (W) - 2 Credits

Select from current general education courses [www.ndsu.edu/registrar/gened/](http://www.ndsu.edu/registrar/gened/)

Cultural Diversity (D)

Select from current general education courses [www.ndsu.edu/registrar/gened/](http://www.ndsu.edu/registrar/gened/)

Global Perspectives (G)

Select from current general education courses [www.ndsu.edu/registrar/gened/](http://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	

**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	3/2cr
CHEM	471*	Physical Chemistry Lab	2 cr
*Not required for Pre-professional and Chemistry Education Options			
BIOC	460	Found/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	471	Physical Chemistry Lab	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	
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

BIOL	150/L	General Biology/Lab	3/1 cr
CHEM	425	Inorganic Chemistry I	3 cr
EDUC	321	Introduction to Teaching	3 cr
EDUC	322	Educational Psychology	3 cr
MATH	266 or	Introduction to Differential Equations	3 cr
STAT	330	Introductory Statistics	
PHYS		Elective	3 cr
Recommended for Education Option			
BIOL	151/L	General Biology II/Lab	3/1 cr
GEOL	105/L	Physical Geology/Lab	3/1 cr

**RELATED REQUIRED COURSES FOR ALL OPTIONS - 13 CREDITS**

MATH	128	Introduction to Linear Algebra	1 cr
MATH	166	Calculus II	4 cr
MATH	259	Multivariate Calculus	3 cr
PHYS	252/L	University Physics II/Lab	4/1 cr

**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.