

Comprehensive Science Education Major

Major Requirements

Degree Type: B.A. or B.S.
Minimum Credits Required: 120

University Degree Requirements

For complete details on these and other university degree requirements, refer to the Degree and Graduation Requirements (<https://catalog.ndsu.edu/academic-policies/undergraduate-policies/degree-and-graduation/>) section in the University Catalog.

1. Minimum of 120 semester credits (some programs may exceed this minimum).
2. Complete the University General Education requirements.
3. Minimum institutional GPA of 2.00 based on work taken at NDSU.
4. Minimum of 30 credits in resident at NDSU.
5. Minimum of 36 upper level credits (courses numbered 300 or higher).
6. Students with transfer credit must meet the NDSU 30 credits in residence (#4). Of these 30 credits in residence, a minimum of 15 credits must be in courses numbered 300 or above, and 15 credits must be in the student's declared major curricula.

University General Education Requirements

A list of university approved general education courses along with the administrative policies governing the requirement and the categories is available here (<https://catalog.ndsu.edu/academic-policies/undergraduate-policies/general-education/>).

Code	Title	Credits
Category C: Communication		12
Category R: Quantitative Reasoning		3
Category S: Science and Technology		10
Category A: Humanities and Fine Arts		6
Category B: Social and Behavioral Sciences		6
Category W: Wellness		2
Category D: Cultural Diversity		
Category G: Global Perspectives		
Category L: Digital Literacy		
Total Credits		39

Major Requirements

Code	Title	Credits
Comprehensive Science Education Requirements		
ENGL 324	Writing in the Sciences	3
Teaching Specialty Requirements		
Primary Concentration - Select one primary concentration from biology, chemistry, earth science, physics. Concentrations listed below.		24-25
Secondary Concentration - Two secondary concentrations from the science area not selected for the primary concentration.		24-28
Tertiary Concentration - One tertiary concentration from the science area not selected for the primary or secondary areas.		8
Math Requirements		
Select the math requirement based on choice of primary concentration. See math requirement section below.		6-18
Professional Education Requirements		
EDUC 321	Introduction to Teaching	3
EDUC 322	Educational Psychology	3
EDUC 451	Instructional Planning, Methods and Assessment	3
EDUC 481	Classroom Practice Methods of Teaching I:	2-3
EDUC 482	Classroom Practice/Methods of Teaching II:	2-3
EDUC 485	Student Teaching Seminar	1
EDUC 486	Classroom Management for Diverse Learners	3
EDUC 487	Student Teaching	9

EDUC 488	Applied Student Teaching	3
EDUC 489	Teaching Students of Diverse Backgrounds	3
Total Credits		97-116

Primary Concentration

Code	Title	Credits
Primary Concentration		
Select one primary concentration from biology, chemistry, earth science, or physics.		
Biology (24 credits)		
BIOL 150 & 150L	General Biology I and General Biology I Laboratory	4
BIOL 151 & 151L	General Biology II and General Biology II Laboratory	4
BIOL 315 & 315L	Genetics and Genetics Laboratory	4
BIOL 359	Evolution	3
BIOL 364	General Ecology	3
BIOL 370	Cell Biology	3
MICR 202 & 202L	Introductory Microbiology and Introductory Microbiology Lab	3
Chemistry (25 credits)		
Select one introductory chemistry sequence (A or B)		8
Sequence A:		
CHEM 121 & 121L	General Chemistry I and General Chemistry I Laboratory	4
CHEM 122 & 122L	General Chemistry II and General Chemistry II Laboratory	
Sequence B:		
CHEM 150 & CHEM 160	Principles of Chemistry I and Principles of Chemistry Laboratory I	4
CHEM 151 & CHEM 161	Principles of Chemistry II and Principles of Chemistry Laboratory II	
CHEM 341 & 341L	Organic Chemistry I and Organic Chemistry I Laboratory	4
CHEM 342 & 342L	Organic Chemistry II and Organic Chemistry II Laboratory	4
CHEM 431 & 431L	Analytical Chemistry I and Analytical Chemistry I Laboratory	5
BIOC 260	Elements of Biochemistry	4
Earth Science (25 credits)		
GEOL 105 & 105L	Physical Geology and Physical Geology Lab	4
GEOL 106 & 106L	The Earth Through Time and The Earth Through Time Lab	4
GEOL 350	Invertebrate Paleontology	3
GEOL 303	Paleontology Field Course	1
GEOL 412	Geomorphology	3
GEOL 420 & GEOL 421	Mineralogy and Mineralogy Laboratory	4
PHYS 110	Introductory Astronomy	3
SOIL 217	Introduction to Meteorology & Climatology	3
Physics (24 credits)		
PHYS 171	Introductory Projects in Physics	1
PHYS 215	Research For Undergraduates	1-3

PHYS 251 & 251L & 251R	University Physics I and University Physics I Laboratory and University Physics I Recitation	6
PHYS 252 & 252L & 252R	University Physics II and University Physics II Laboratory and University Physics II Recitation	6
PHYS 350	Modern Physics	3
PHYS 355	Classical Mechanics	3
PHYS 361	Electromagnetic Theory	3

Secondary Concentration

Code	Title	Credits
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Secondary Concentration

Select two secondary concentrations not selected as the primary.

Biology (14 credits)

BIOL 150 & 150L	General Biology I and General Biology I Laboratory	4
BIOL 151 & 151L	General Biology II and General Biology II Laboratory	4
BIOL 315	Genetics	3
BIOL 359	Evolution	3

Chemistry (12 credits)

Select one introductory chemistry sequence (A or B) 8

Sequence A:

CHEM 121 & 121L	General Chemistry I and General Chemistry I Laboratory	
CHEM 122 & 122L	General Chemistry II and General Chemistry II Laboratory	

Sequence B:

CHEM 150 & CHEM 160	Principles of Chemistry I and Principles of Chemistry Laboratory I	
CHEM 151 & CHEM 161	Principles of Chemistry II and Principles of Chemistry Laboratory II	
CHEM 341 & 341L	Organic Chemistry I and Organic Chemistry I Laboratory	4

Earth Science (14 credits)

GEOL 105 & 105L	Physical Geology and Physical Geology Lab	4
GEOL 106 & 106L	The Earth Through Time and The Earth Through Time Lab	4
PHYS 110	Introductory Astronomy	3
SOIL 217	Introduction to Meteorology & Climatology	3

Physics (12 credits)

PHYS 110 & 110L	Introductory Astronomy and Introductory Astronomy Lab	4
PHYS 211 & 211L	College Physics I and College Physics I Laboratory	4
PHYS 212 & 212L	College Physics II and College Physics II Laboratory	4

Tertiary Concentration

Code	Title	Credits
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Tertiary Concentration

Select one tertiary concentration not selected as the primary or secondary concentrations.

Biology (8 credits)

BIOL 150 & 150L	General Biology I and General Biology I Laboratory	4
BIOL 151 & 151L	General Biology II and General Biology II Laboratory	4

Chemistry (8 credits)

Select one introductory chemistry sequence (A or B) 8

Sequence A:

CHEM 121 & 121L	General Chemistry I and General Chemistry I Laboratory	
CHEM 122 & 122L	General Chemistry II and General Chemistry II Laboratory	

Sequence B:

CHEM 150 & CHEM 160	Principles of Chemistry I and Principles of Chemistry Laboratory I	
CHEM 151 & CHEM 161	Principles of Chemistry II and Principles of Chemistry Laboratory II	

Earth Science (8 credits)

GEOL 105 & 105L	Physical Geology and Physical Geology Lab	4
GEOL 106 & 106L	The Earth Through Time and The Earth Through Time Lab	4

Physics (8 credits)

PHYS 211 & 211L	College Physics I and College Physics I Laboratory	4
PHYS 212 & 212L	College Physics II and College Physics II Laboratory	4

Math Requirement

Code	Title	Credits
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Math Requirement

Select the math requirement based on the choice of primary concentration.

Biology or Earth Science (6-7 credits)

MATH 105 or MATH 146	Trigonometry Applied Calculus I	3 or 4
STAT 330	Introductory Statistics	3

Chemistry (11 credits)

MATH 165	Calculus I	4
MATH 166	Calculus II	4
STAT 330	Introductory Statistics	3

Physics (18 credits)

MATH 165	Calculus I	4
MATH 166	Calculus II	4
MATH 265	Calculus III	4
MATH 266	Introduction to Differential Equations	3
MATH 129 or MATH 329	Basic Linear Algebra Intermediate Linear Algebra	3

Degree Requirements and Notes

- See School of Education (<https://www.ndsu.edu/education/>) for admission requirements.
- Courses taken P/F may not be used to satisfy any requirements.
- A grade of 'C' or better is required in all professional education courses.
- To be placed in student teaching, a 2.75 cumulative GPA and a 2.75 GPA in professional education coursework is required.

- To exit the program, a 2.75 cumulative GPA and a 2.75 GPA in professional education coursework is required as well as completing the Praxis Subject test and the Principles of Learning and Teaching test.
- Students who select Physics as their Primary Concentration can add Mathematics as an additional teacher licensure area with 6 additional credits. See your academic advisor for details.