Composite Science Education

The Bachelor of Science Education in Composite Science Education at Minot State University will prepare you to teach Biology, Chemistry, Earth Science, and Physics/Astronomy, and then you will choose to focus on one of these science disciplines (Biology, Chemistry, or Geology) by taking degree-specific electives. With a composite science education degree, you are more likely to find a job in almost any school district in North Dakota, both Class A and B schools and school districts across the United States and Canada. The demand for science, technology, engineering, and mathematics (STEM) teachers is so great that many communities are demanding science teachers that can teach multiple science disciplines on the secondary level. After graduating, you will be licensed to teach science from grades 5-12.

Composite Science Education Program Outcomes

Student Learning Goals	Student Learning Outcomes
SLG 1: 13047.1 Integrate knowledge from various science disciplines (Biology, Chemistry, Geosciences, and Physics) to address real-world issues and appreciate the interconnectedness of those disciplines.	SLO 1: Recall key content and apply essential concepts related to Biology, Chemistry, Geosciences, and Physics.
	SLO 2: Demonstrate, interpret, synthesize, and apply scientific processes and content to specific scientific topics.
SLG 2: 13047.1 Demonstrate knowledge of math and statistics.	SLO 1: Demonstrate proficiency in math and statistics when experimenting and examining scientific data.
SLG 3: 13047.2 Incorporate the nature of science from a broader perspective, including the history and philosophy of science and the interrelationships among the science disciplines.	SLO 1: Demonstrate the appropriate scientific methods used in each science discipline.
	SLO 2: Conduct experiments, analyze results, and draw appropriate conclusions based on the observed phenomena.
	SLO 3: Recognize and articulate critical scientific discoveries and the influence those events had on the development of science disciplines and technologies.
	SLO 4: Make connections among scientific concepts and phenomena related to real-world issues/problems, then make meaningful applications.
SLG 4: 13047.3 Demonstrate the ability to apply an inquiry approach common to all science disciplines.	SLO 1: Locate resources, design and conduct inquiry-based, open-ended investigations, interpret findings, communicate results, and make judgments based on evidence.
	SLO 2: Demonstrates knowledge of central concepts, tools of inquiry, and structures of the science discipline(s) they teach.
SLG 5: 13047.4 Relate science to students' daily lives and interests and to the larger framework of human endeavor and understanding.	SLO 1: Recall key facts and apply important scientific concepts related to the relationships between science and the larger framework of human endeavor and understanding, including various communities' industry, business, government, and multicultural aspects.
SLG 6: 13047.5 Demonstrate proficiency in the methods of teaching.	SLO 1: Engages learners in higher-order thinking skills when teaching about scientific concepts and phenomena (i.e., critical thinking, perspective-taking, creativity, collaborative work, and communication).
	SLO 2: Creates learning experiences that make the sciences accessible and meaningful for learners to ensure mastery of the content.
SLG 7: 13047.6 Identify and evaluate the appropriate science curriculum for each science discipline and grade level taught.	SLO 1: Creates, plans, and sequences varied instructional activities to support the growth of all students toward a rigorous curriculum goal(s).
SLG 8: 13047.7 Identify and implement various performance assessment strategies to evaluate the learner's intellectual, social, and personal development in all aspects of science.	SLO 1: Utilize various performance assessment strategies (formative and summative assessments) as appropriate to support, verify, and document learning in the classroom and lab.
	SLO 2: Take responsibility for evidence-based strengths and weaknesses in their own teaching practices and engage in ongoing professional learning.
SLG 9: 13047.8 Design and manage safe and supportive classroom, laboratory, and field learning environments.	SLO 1: Design and manage safe and supportive grade level and scientific learning environments in the classroom and lab settings.
	SLO 2: Manage the learning environment to engage learners as active participants in individual and cooperative learning opportunities.
SLG 10: 13047.9 Participate in the professional community, improving practice through personal actions, education, and development.	SLO 1: Collaborates and communicates with colleagues, specialists, community resources, families, and learners to meet individual learning needs.

	SLO 2: Collaborates and communicates with other educators, families, and communities to create a positive learning climate marked by respect, rigor, and responsibility.
SLG 11: 13047.10 Utilize current and appropriate instructional technologies.	SLO 1: Select and use a variety of instructional strategies, including current appropriate technologies to make learning accessible to all learners.

University Teacher Education Policies

Refer to the Teacher Education Policies and Procedure (http://catalog.minotstateu.edu/undergraduate/teachereducationpoliciesandprocedures/) pages of the catalog for details regarding Teacher Education at Minot State University. These pages will explain admission, retention, and exit requirements of the program for Composite Science majors in Teacher Education.

Any students who wish to major or minor in Biology as they obtain their **BSEd Composite Science** degree should speak to their advisor.

Bachelor of Science in Education with a Major in Composite Science Education

Composite Science Education Majors must take all core courses and major in either biology, chemistry, or earth science		
General Education		
Composite Science Education majors are required to take the following courses which may be used to help satisfy General Education requirements:		
MATH 103	College Algebra	4
or MATH 107	Precalculus	
MATH 105	College Trigonometry	4
or MATH 165	Calculus I	
PHYS 211	College Physics I	4
or PHYS 251	University Physics I	
PHYS 110	Astronomy	4
GEOG 330	Geography of Weather and Climate	3
or SCI 110	Introduction to Meteorology	
MATH 210	Elementary Statistics	4
or BIOL 240	Biometry	
or DATA 211	Applied Statistics and Data Visualization	
Required Core Science Courses		
BIOL 150	General Biology I	4
BIOL 151	General Biology II	4
BIOL 215	Genetics	4
BIOL 301	Evolution	3
CHEM 121	General Chemistry I (& Chem 121L)	5
CHEM 122	General Chemistry II (& Chem 122L)	5
CHEM 230	Quantitative Analysis	5
GEOL 105	Physical Geology with Lab	4
GEOL 106	Historical Geology with Lab	4
GEOL 307	Mineralogy	4
Biology Focus		
3 Additional 200+ Biology Electives, not including BIOL 240		9-12
Chemistry Focus		
CHEM 240	Fundamentals of Organic Chemistry	5
or CHEM 341	Organic Chemistry I	
4+ credits of Chemistry Electives CHEM 342 or above		4-5
Earth Science Focus		
GEOL 322	Geomorphology	4
GEOL 361	Structural Geology	4
GEOL 471	Sedimentation and Stratigraphy	4
Research Track Courses		
Biology		
BIOL 492	Directed Research ((Taken over 2 or more semesters))	1-5

Chemistry/Geology		
SCI 240	Research Methods	2
SCI 480	Seminar	3
Or		
Non-Research Track		
Two additional 300+ courses within major		6-8
Professional Education Sequence (admission to teacher education not required)		
ED 260	Educational Psychology	3
ED 260L	Clinical I	0
ED 282	Managing the Learning Environment	2
ED 282L	Clinical II	0.5
ED 284	Teaching Diverse Learners	2
ED 284L	Clinical III	0.5
ED 287	Early-Level Transition Point Conference	0
ED 320	Curriculum, Planning, and Assessment I	2
ED 321L	Clinical IV	0.5
ED 323L	Clinical V	0.5
ED 324L	Fall Experience	0
ED 380	Technology in Teaching	2
ED 407	Mid-Level Transition Point Conference	0
SPED 110	Introduction to Exceptional Children	3
HIST 283	Diversity in America	3
Select one of the following:		3
Professional Education Sequence (admission to teacher education required)		
ED 322	Data Driven Integrated Instruction [1]	2
ED 483	Student Teaching Seminar: Secondary [1]	2
or ED 482	Student Teaching Seminar: Elementary	
or ED 484	Student Teaching Seminar: K12	
Department Specific Courses (admission to teacher education required)		
SCI 391	Teaching Science in Secondary Schools [1]	3
ED 493	Student Teaching, Secondary [1]	10
Total Hours		**146-156**

[1] Requires admittance to Teacher Education. Refer to Teacher Education Policies and Procedures (http://catalog.minotstateu.edu/undergraduate/teachereducationpoliciesandprocedures/).