

**Appendix A**  
**Program of Study for MATH/SCIENCE Composite Major**

**Core Courses: 7 Credit Hours**

- MATH 151 Calculus I 4
- GENL 255 Navigating a Diverse Society for Equality in MATH/SCIENCE 3

**Students select 2 areas of study from the following 4 options:**

**MATHEMATICS EMPHASIS Required Mathematics Courses: 16 Credit hours**

- MATH 152 Calculus II 4 cr
- MATH 153 Calculus III 3 cr
- MATH 200 Foundations of Mathematics 3 cr
- MATH 220 Linear Algebra 3 cr
- MATH 315 Probability and Statistics 3 cr

Recommended Supportive Courses:

- COSC 210 Computer Science I 4 cr
- PHYS 221 General Physics I 4 cr

**BIOLOGY EMPHASIS Required Biology Courses: 20 Credit hours**

- BIOL 120 General Biology I 4 cr
- BIOL 121 General Biology II 4 cr
- BIOL 233 Genetics 4 cr
- BIOL 234 Cell Biology 4 cr
- BIOL 300-level Ecology course 4 cr

Required Supportive course for Biology Emphasis: 8 credit hours

- CHEM 116 General Chemistry I 4 cr
- CHEM 145 Survey of Organic and Biochemistry 4 cr OR CHEM 201 Organic Chemistry I 4 cr

**CHEMISTRY EMPHASIS Required Chemistry Courses: 20 Credit hours**

- CHEM 116 General Chemistry I 4 cr
- CHEM 117 General Chemistry II 4 cr
- CHEM 145 Survey of Organic and Biochemistry 4 cr
- CHEM 222 Inorganic Chemistry 4 cr
- CHEM 242 Analysis 4 cr OR CHEM 300-level course

**PHYSICS EMPHASIS Required Physics Courses: 16 Credit hours**

- PHYS 201 Physics for Life Sciences I 4 cr OR PHYS 221 General Physics I 4 cr
- PHYS 202 Physics for Life Sciences II 4 cr OR PHYS 222 General Physics II 4 cr
- PHYS 281 Intermediate Laboratory 4 cr
- PHYS 371 Modern Physics 4 cr

Required Supportive course for Physics Emphasis: 4 credit hours

- MATH 152 Calculus II 4 cr

Recommended Courses for Physics Emphasis:

- PHYS 190 Astronomy 3 cr
- PHYS 300-level Elective 3 cr

**Students must also complete the 7-12 Secondary Education Program of Study**

- EDUC 110—Foundations of American Education 3 cr
- EDUC 219—Technology in Education 3 cr
- EDUC 245—Educational Psychology and Measurement 3 cr
- EDUC 275—Teach, Learn, Connect Methods 3 cr
- EDUC 310F/H—Secondary School Methods (Math and/or Science) 3-6 cr
- EDUC 330—Foundations and Methods--Middle Level 3 cr
- EDUC 335—Literacy in the Content Area 3 cr
- EDUC 345—Adolescent Development 3 cr
- EDUC 355—Human Relations in Education 3 cr
- SPED 240—Teaching in Inclusive Schools 3 cr
- NAST 320—Native American Studies 3 cr

## Appendix B

**This matrix demonstrates how the required courses/experiences of this new program will meet the specific program standards and verifies compliance to all applicable program standards. (See syllabi for correlation of standards to course objectives.)**

<b>ARSD 24:53:07:09 STANDARDS: MATHEMATICS</b>	MATH 151	MATH 152	MATH 153	MATH 200	MATH 220	MATH 315	COSC 210	PHYS 221	GENL 255
<b>1. Knowledge of Problem Solving.</b> Candidates know, understand and apply the process of mathematical problem solving.	X	X	X		X	X			
<b>2. Knowledge of Reasoning and Proof.</b> Candidates reason, construct, and evaluate mathematical arguments and develop an appreciation for mathematical rigor and inquiry.	X	X	X	X	X	X			
<b>3. Knowledge of Mathematical Communication.</b> Candidates communicate their mathematical thinking orally and in writing to peers, faculty and others.	X	X	X	X	X	X			
<b>4. Knowledge of Mathematical Connections.</b> Candidates recognize, use, and make connections between and among mathematical ideas and in contexts outside mathematics to build mathematical understanding.			X		X	X	X	X	
<b>5. Knowledge of Mathematical Representation.</b> Candidates use varied representations of mathematical ideas to support and deepen students' mathematical understanding.	X	X	X	X	X	X			
<b>6. Knowledge of Technology.</b> Candidates embrace technology as an essential tool for teaching and learning mathematics.	X	X	X			X			
<b>7. Knowledge of Mathematics Pedagogy.</b> Candidates possess a deep understanding of how students learn mathematics and of the pedagogical knowledge specific to mathematics teaching and learning.	This standard is met in the 7-12 Secondary Education Program of study—see EDUC matrix at the end of this document								
<b>8. Knowledge of Number and Operations.</b> Candidates demonstrate computational proficiency, including a conceptual understanding of numbers, ways of representing number, relationships among number and number systems, and the meaning of operations.	X	X	X	X	X	X	X		
<b>9. Knowledge of Different Perspectives on Algebra.</b> Candidates emphasize relationships among quantities including functions, ways of representing mathematical relationships, and the analysis of change.	X	X	X		X				
<b>10. Knowledge of Geometries.</b> Candidates use spatial visualization and geometric modeling to explore and analyze geometric shapes, structures, and their properties.	X	X	X			X			
<b>11. Knowledge of Calculus.</b> Candidates demonstrate a conceptual understanding of limit, continuity, differentiation, and integration and a thorough background in techniques and application of the calculus.	X	X	X			X			
<b>12. Knowledge of Discrete Mathematics.</b> Candidates apply the fundamental ideas of discrete mathematics in the formulation and solution of problems.		X		X	X	X			
<b>13. Knowledge of Data Analysis, Statistics, and Probability.</b> Candidates demonstrate an understanding of concepts and practices related to data analysis, statistics, and probability.						X			

## BIOLOGY

### ARSD 24:53:07:10 STANDARDS: SCIENCE

	MATH 151	GENL 255	BIOL 120	BIOL 121	BIOL 233	BIOL 234	ECOL COURS E	CHE M 116	CHEM 145 or 201
<p><b>1. Content.</b> Teachers of science understand and can articulate the knowledge and practices of contemporary science. They can interrelate and interpret important concepts, ideas, and applications in their fields of licensure; and can conduct scientific investigations. To show that they are prepared in content, teachers of science must demonstrate that they</p> <p><b>(a)</b> understand and can successfully convey to students the major concepts, principles, theories, laws, and interrelationships of their fields of licensure and supporting fields as recommended by the National Science Teachers Association; <b>(See specific content areas below for standards.)</b></p> <p><b>(b)</b> understand and can successfully convey to students the unifying concepts of science delineated by the National Science Education Standards;</p> <p><b>(c)</b> understand and can successfully convey to students important personal and technological applications of science in their fields of licensure;</p> <p><b>(d)</b> understand research and can successfully design, conduct, report evaluate investigations in science</p> <p><b>(e);</b> and understand and can successfully use mathematics to process and report data, and solve problems, in their field(s) of licensure.</p>			X	X	X	X	X	X	X
<p><b>2. Nature of Science.</b> Teachers of science engage students effectively in studies of the history, philosophy, and practice of science. They enable students to distinguish science from nonscience, understand the evolution and practice of science as a human endeavor, and critically analyze assertions made in the name of science. To show they are prepared to teach the nature of science, teachers of science must demonstrate that they:</p> <p><b>(a)</b> understand the historical and cultural development of science and the evolution of knowledge in their discipline;</p> <p><b>(b)</b> understand the philosophical tenets, assumptions, goals, and values that distinguish science from technology and from other ways of knowing the world;</p> <p><b>(c)</b> engage students successfully in studies of the nature of science including, when possible, the critical analysis of false or doubtful assertions made in the name of science</p>			X		X	X		X	X
<p><b>3. Inquiry.</b> Teachers of science engage students both in studies of various methods of scientific inquiry and in active learning through scientific inquiry. They encourage students, individually and collaboratively, to observe, ask questions, design inquiries, and collect and interpret data in order to develop concepts and relationships from empirical experiences. To show that they are prepared to teach through inquiry, teachers of science must demonstrate that they:</p> <p><b>(a)</b> understand the processes, tenets, and assumptions of multiple methods of inquiry leading to scientific knowledge;</p> <p><b>(b)</b> engage students successfully in developmentally appropriate inquiries that require them</p>			X	X	X	X	X	X	X

<p>to develop concepts and relationships from their observations, data, and inferences in a scientific manner.</p>									
<p><b>4. Issues.</b> Teachers of science recognize that informed citizens must be prepared to make decisions and take action on contemporary science- and technology-related issues of interest to the general society. They require students to conduct inquiries into the factual basis of such issues and to assess possible actions and outcomes based upon their goals and values. To show that they are prepared to engage students in studies of issues related to science, teachers of science must demonstrate that they:</p> <p>(a) understand socially important issues related to science and technology in their field of licensure, as well as processes used to analyze and make decisions on such issues;</p> <p>(b) engage students successfully in the analysis of problems, including considerations of risks, costs, and benefits of alternative solutions; relating these to the knowledge, goals and values of the students.</p>				X	X	X	X		
<p><b>5. General Skills of Teaching.</b> Teachers of science create a community of diverse learners who construct meaning from their science experiences and possess a disposition for further exploration and learning. They use, and can justify, a variety of classroom arrangements, groupings, actions, strategies, and methodologies. To show that they are prepared to create a community of diverse learners, teachers of science must demonstrate that they</p> <p>(a) vary their teaching actions, strategies, and methods to promote the development of multiple student skills and levels of understanding;</p> <p>(b) successfully promote the learning of science by students with different abilities, needs, interests, and backgrounds;</p> <p>(c) successfully organize and engage students in collaborative learning using different student group learning strategies;</p> <p>(d) successfully use technological tools, including but not limited to computer technology, to access resources, collect and process data, and facilitate the learning of science;</p> <p>(e) understand and build effectively upon the prior beliefs, knowledge, experiences, and interests of students; and</p> <p>(f) create and maintain a psychologically and socially safe and supportive learning environment.</p>	<p>These standards are met in the 7-12 Secondary Education Program of study— see EDUC matrix at the end of this document</p>								
<p><b>6. Curriculum.</b> Teachers of science plan and implement an active, coherent, and effective curriculum that is consistent with the goals and recommendations of the National Science Education Standards. They begin with the end in mind and effectively incorporate contemporary practices and resources into their planning and teaching. To show that they are prepared to plan and implement an effective science curriculum, teachers of science must demonstrate that they:</p> <p>(a) understand the curricular recommendations of the National Science Education Standards, and can identify, access, and/or create resources and activities for science education that are consistent with the standards;</p>									

<p><b>(b)</b> plan and implement internally consistent units of study that address the diverse goals of the National Science Education Standards and the needs and abilities of students.</p>									
<p><b>7. Science in the Community.</b> Teachers of science relate their discipline to their local and regional communities, involving stakeholders and using the individual, institutional, and natural resources of the community in their teaching. They actively engage students in science-related studies or activities related to locally important issues. To show that they are prepared to relate science to the community, teachers of science must demonstrate that they:</p> <p><b>(a)</b> identify ways to relate science to the community, involve stakeholders, and use community resources to promote the learning of science;</p> <p><b>(b)</b> involve students successfully in activities that relate science to resources and stakeholders in the community or to the resolution of issues important to the community.</p>			X				X		
<p><b>8. Assessment.</b> Teachers of science construct and use effective assessment strategies to determine the backgrounds and achievements of learners and facilitate their intellectual, social, and personal development. They assess students fairly and equitably, and require that students engage in ongoing self-assessment. To show that they are prepared to use assessment effectively, teachers of science must demonstrate that they:</p> <p><b>(a)</b> use multiple assessment tools and strategies to achieve important goals for instruction that are aligned with methods of instruction and the needs of students;</p> <p><b>(b)</b> use the results of multiple assessments to guide and modify instruction, the classroom environment, or the assessment process;</p> <p><b>(c)</b> use the results of assessments as vehicles for students to analyze their own learning, engaging students in reflective self-analysis of their own work.</p>	<p>This standard is met in the 7-12 Secondary Education Program of study—see EDUC matrix at the end of this document</p>								
<p><b>9. Safety and Welfare.</b> Teachers of science organize safe and effective learning environments that promote the success of students and the welfare of all living things. They require and promote knowledge and respect for safety, and oversee the welfare of all living things used in the classroom or found in the field. To show that they are prepared, teachers of science must demonstrate that they:</p> <p><b>(a)</b> understand the legal and ethical responsibilities of science teachers for the welfare of their students, the proper treatment of animals, and the maintenance and disposal of materials;</p> <p><b>(b)</b> know and practice safe and proper techniques for the preparation, storage, dispensing, supervision, and disposal of all materials used in science instruction;</p> <p><b>(c)</b> know and follow emergency procedures, maintain safety equipment, and ensure safety procedures appropriate for the activities and the abilities of students;</p> <p><b>(d)</b> treat all living organisms used in the classroom or found in the field in a safe, humane, and ethical manner and respect legal restrictions on their collection, keeping, and use.</p>			X	X	X	X	X	X	X

<b>(1) A science composite program shall meet the requirements of at least two of the programs listed in subdivisions (2) through (6) of this section;</b>	MATH 151	GENL 255	BIOL 120	BIOL 121	BIOL 233	BIOL 234	ECOL COURS E	CHE M 116	CHEM 145 or 201
<b>(2) A 7-12 biology education program shall require the demonstrated knowledge and experiences in the systematic, quantitative, and qualitative study of the fundamentals of biology, to include the study of:</b>									
(a) The relationship of species, ecology, morphology, anatomy, physiology, and genetics;			X	X	X	X	X		
(b) The development and classification of plants, animals, fungi, prostista, and monera; and				X					
(c) The structure and function of organisms at all levels of complexity from the molecular to the organ systems;			X	X	X	X	X		

## CHEMISTRY

<b>ARSD 24:53:07:10 STANDARDS: SCIENCE</b>	MATH 151	GENL 255	CHEM 116	CHEM 117	CHEM 145	CHEM 222	CHEM 242 or 300 elect
<p><b>1. Content.</b> Teachers of science understand and can articulate the knowledge and practices of contemporary science. They can interrelate and interpret important concepts, ideas, and applications in their fields of licensure; and can conduct scientific investigations. To show that they are prepared in content, teachers of science must demonstrate that they</p> <p><b>(a)</b> understand and can successfully convey to students the major concepts, principles, theories, laws, and interrelationships of their fields of licensure and supporting fields as recommended by the National Science Teachers Association; <b>(See specific content areas below for standards.)</b></p> <p><b>(b)</b> understand and can successfully convey to students the unifying concepts of science delineated by the National Science Education Standards;</p> <p><b>(c)</b> understand and can successfully convey to students important personal and technological applications of science in their fields of licensure;</p> <p><b>(d)</b> understand research and can successfully design, conduct, report evaluate investigations in science</p> <p><b>(e);</b> and understand and can successfully use mathematics to process and report data, and solve problems, in their field(s) of licensure.</p>			X	X	X	X	X
<p><b>2. Nature of Science.</b> Teachers of science engage students effectively in studies of the history, philosophy, and practice of science. They enable students to distinguish science from nonscience, understand the evolution and practice of science as a human endeavor, and critically analyze assertions made in the name of science. To show they are prepared to teach the nature of science, teachers of science must demonstrate that they:</p> <p><b>(b)</b> understand the historical and cultural development of science and the evolution of knowledge in their discipline;</p> <p><b>(b)</b> understand the philosophical tenets, assumptions, goals, and values that distinguish science from technology and from other ways of knowing the world;</p> <p><b>(c)</b> engage students successfully in studies of the nature of science including, when possible, the critical analysis of false or doubtful assertions made in the name of science</p>			X	X	X	X	X
<p><b>3. Inquiry.</b> Teachers of science engage students both in studies of various methods of scientific inquiry and in active learning through scientific inquiry. They encourage students, individually and collaboratively, to observe, ask questions, design inquiries, and collect and interpret data in order to develop concepts and relationships from empirical experiences. To show that they are prepared to teach through inquiry, teachers of science must demonstrate that they:</p> <p><b>(a)</b> understand the processes, tenets, and assumptions of multiple methods of inquiry leading to scientific knowledge;</p> <p><b>(b)</b> engage students successfully in developmentally appropriate inquiries that require them</p>			X	X	X	X	X

<p>to develop concepts and relationships from their observations, data, and inferences in a scientific manner.</p>							
<p><b>4. Issues.</b> Teachers of science recognize that informed citizens must be prepared to make decisions and take action on contemporary science- and technology-related issues of interest to the general society. They require students to conduct inquiries into the factual basis of such issues and to assess possible actions and outcomes based upon their goals and values. To show that they are prepared to engage students in studies of issues related to science, teachers of science must demonstrate that they:</p> <p>(b) understand socially important issues related to science and technology in their field of licensure, as well as processes used to analyze and make decisions on such issues;</p> <p>(b) engage students successfully in the analysis of problems, including considerations of risks, costs, and benefits of alternative solutions; relating these to the knowledge, goals and values of the students.</p>			X	X	X	X	X
<p><b>5. General Skills of Teaching.</b> Teachers of science create a community of diverse learners who construct meaning from their science experiences and possess a disposition for further exploration and learning. They use, and can justify, a variety of classroom arrangements, groupings, actions, strategies, and methodologies. To show that they are prepared to create a community of diverse learners, teachers of science must demonstrate that they</p> <p>(b) vary their teaching actions, strategies, and methods to promote the development of multiple student skills and levels of understanding;</p> <p>(b) successfully promote the learning of science by students with different abilities, needs, interests, and backgrounds;</p> <p>(c) successfully organize and engage students in collaborative learning using different student group learning strategies;</p> <p>(d) successfully use technological tools, including but not limited to computer technology, to access resources, collect and process data, and facilitate the learning of science;</p> <p>(e) understand and build effectively upon the prior beliefs, knowledge, experiences, and interests of students; and</p> <p>(f) create and maintain a psychologically and socially safe and supportive learning environment.</p>	<p>These standards are met in the 7-12 Secondary Education Program of study— see EDUC matrix at the end of this document</p>						
<p><b>6. Curriculum.</b> Teachers of science plan and implement an active, coherent, and effective curriculum that is consistent with the goals and recommendations of the National Science Education Standards. They begin with the end in mind and effectively incorporate contemporary practices and resources into their planning and teaching. To show that they are prepared to plan and implement an effective science curriculum, teachers of science must demonstrate that they:</p> <p>(b) understand the curricular recommendations of the National Science Education Standards, and can identify, access, and/or create resources and activities for science education that are consistent with the standards;</p>							

<p>(b) plan and implement internally consistent units of study that address the diverse goals of the National Science Education Standards and the needs and abilities of students.</p>							
<p><b>7. Science in the Community.</b> Teachers of science relate their discipline to their local and regional communities, involving stakeholders and using the individual, institutional, and natural resources of the community in their teaching. They actively engage students in science-related studies or activities related to locally important issues. To show that they are prepared to relate science to the community, teachers of science must demonstrate that they:</p> <p>(a) identify ways to relate science to the community, involve stakeholders, and use community resources to promote the learning of science;</p> <p>(b) involve students successfully in activities that relate science to resources and stakeholders in the community or to the resolution of issues important to the community.</p>			X	X	X	X	X
<p><b>8. Assessment.</b> Teachers of science construct and use effective assessment strategies to determine the backgrounds and achievements of learners and facilitate their intellectual, social, and personal development. They assess students fairly and equitably, and require that students engage in ongoing self-assessment. To show that they are prepared to use assessment effectively, teachers of science must demonstrate that they:</p> <p>(a) use multiple assessment tools and strategies to achieve important goals for instruction that are aligned with methods of instruction and the needs of students;</p> <p>(b) use the results of multiple assessments to guide and modify instruction, the classroom environment, or the assessment process;</p> <p>(c) use the results of assessments as vehicles for students to analyze their own learning, engaging students in reflective self-analysis of their own work.</p>	<p>This standard is met in the 7-12 Secondary Education Program of study—see EDUC matrix at the end of this document</p>						
<p><b>9. Safety and Welfare.</b> Teachers of science organize safe and effective learning environments that promote the success of students and the welfare of all living things. They require and promote knowledge and respect for safety, and oversee the welfare of all living things used in the classroom or found in the field. To show that they are prepared, teachers of science must demonstrate that they:</p> <p>(a) understand the legal and ethical responsibilities of science teachers for the welfare of their students, the proper treatment of animals, and the maintenance and disposal of materials;</p> <p>(b) know and practice safe and proper techniques for the preparation, storage, dispensing, supervision, and disposal of all materials used in science instruction;</p> <p>(c) know and follow emergency procedures, maintain safety equipment, and ensure safety procedures appropriate for the activities and the abilities of students;</p> <p>(d) treat all living organisms used in the classroom or found in the field in a safe, humane, and ethical manner and respect legal restrictions on their collection, keeping, and use.</p>			X	X	X	X	X

<p><b>(1) A science composite program shall meet the requirements of at least two of the programs listed in subdivisions (2) through (6) of this section;</b></p> <p><b>(3) A 7-12 chemistry education program shall require demonstrated knowledge and experiences in the systematic, quantitative, and qualitative study of:</b></p>	MATH 151	GENL 255	CHEM 116	CHEM 117	CHEM 145	CHEM 222	CHEM 242 or 300 elect
(a) Fundamental principles of chemistry, biochemistry, and inorganic chemical nomenclature;			X	X			
(b) Descriptive study of elements, molecules, and formula units;			X	X	X	X	X
(c) Study of organic chemistry with emphasis on reaction mechanisms, organic chemical nomenclature, and the identification of organic substances through chemical and spectrophotometric means; and					X		
(d) Analytical chemistry with emphasis on the fundamentals of analysis, wet chemist assay methods, separation chemistry, and relevant instrumentation;			X	X		X	X

## PHYSICS

<b>ARSD 24:53:07:10 STANDARDS: SCIENCE</b>	MATH 151	GENL 255	PHYS 201 or 221	PHYS 202 or 222	PHYS 281	PHYS 371	PHYS 190	PHYS 300 elect	MATH 152
<p><b>1. Content.</b> Teachers of science understand and can articulate the knowledge and practices of contemporary science. They can interrelate and interpret important concepts, ideas, and applications in their fields of licensure; and can conduct scientific investigations. To show that they are prepared in content, teachers of science must demonstrate that they</p> <p><b>(a)</b> understand and can successfully convey to students the major concepts, principles, theories, laws, and interrelationships of their fields of licensure and supporting fields as recommended by the National Science Teachers Association; <b>(See specific content areas below for standards.)</b></p> <p><b>(b)</b> understand and can successfully convey to students the unifying concepts of science delineated by the National Science Education Standards;</p> <p><b>(c)</b> understand and can successfully convey to students important personal and technological applications of science in their fields of licensure;</p> <p><b>(d)</b> understand research and can successfully design, conduct, report evaluate investigations in science</p> <p><b>(e);</b> and understand and can successfully use mathematics to process and report data, and solve problems, in their field(s) of licensure.</p>			X	X	X	X	X	X	
<p><b>2. Nature of Science.</b> Teachers of science engage students effectively in studies of the history, philosophy, and practice of science. They enable students to distinguish science from nonscience, understand the evolution and practice of science as a human endeavor, and critically analyze assertions made in the name of science. To show they are prepared to teach the nature of science, teachers of science must demonstrate that they:</p> <p><b>(c)</b> understand the historical and cultural development of science and the evolution of knowledge in their discipline;</p> <p><b>(b)</b> understand the philosophical tenets, assumptions, goals, and values that distinguish science from technology and from other ways of knowing the world;</p> <p><b>(c)</b> engage students successfully in studies of the nature of science including, when possible, the critical analysis of false or doubtful assertions made in the name of science</p>			X		X	X			
<p><b>3. Inquiry.</b> Teachers of science engage students both in studies of various methods of scientific inquiry and in active learning through scientific inquiry. They encourage students, individually and collaboratively, to observe, ask questions, design inquiries, and collect and interpret data in order to develop concepts and relationships from empirical experiences. To show that they are prepared to teach through inquiry, teachers of science must demonstrate that they:</p> <p><b>(a)</b> understand the processes, tenets, and assumptions of multiple methods of inquiry leading to scientific knowledge;</p> <p><b>(b)</b> engage students successfully in developmentally appropriate inquiries that require them</p>			X	X	X				

<p>to develop concepts and relationships from their observations, data, and inferences in a scientific manner.</p>									
<p><b>4. Issues.</b> Teachers of science recognize that informed citizens must be prepared to make decisions and take action on contemporary science- and technology-related issues of interest to the general society. They require students to conduct inquiries into the factual basis of such issues and to assess possible actions and outcomes based upon their goals and values. To show that they are prepared to engage students in studies of issues related to science, teachers of science must demonstrate that they:</p> <p>(c) understand socially important issues related to science and technology in their field of licensure, as well as processes used to analyze and make decisions on such issues;</p> <p>(b) engage students successfully in the analysis of problems, including considerations of risks, costs, and benefits of alternative solutions; relating these to the knowledge, goals and values of the students.</p>				X					
<p><b>5. General Skills of Teaching.</b> Teachers of science create a community of diverse learners who construct meaning from their science experiences and possess a disposition for further exploration and learning. They use, and can justify, a variety of classroom arrangements, groupings, actions, strategies, and methodologies. To show that they are prepared to create a community of diverse learners, teachers of science must demonstrate that they</p> <p>(c) vary their teaching actions, strategies, and methods to promote the development of multiple student skills and levels of understanding;</p> <p>(b) successfully promote the learning of science by students with different abilities, needs, interests, and backgrounds;</p> <p>(c) successfully organize and engage students in collaborative learning using different student group learning strategies;</p> <p>(d) successfully use technological tools, including but not limited to computer technology, to access resources, collect and process data, and facilitate the learning of science;</p> <p>(e) understand and build effectively upon the prior beliefs, knowledge, experiences, and interests of students; and</p> <p>(f) create and maintain a psychologically and socially safe and supportive learning environment.</p>	<p>These standards are met in the 7-12 Secondary Education Program of study—see EDUC matrix at the end of this document</p>								

<p><b>6. Curriculum.</b> Teachers of science plan and implement an active, coherent, and effective curriculum that is consistent with the goals and recommendations of the National Science Education Standards. They begin with the end in mind and effectively incorporate contemporary practices and resources into their planning and teaching. To show that they are prepared to plan and implement an effective science curriculum, teachers of science must demonstrate that they:</p> <p>(c) understand the curricular recommendations of the National Science Education Standards, and can identify, access, and/or create resources and activities for science education that are consistent with the standards;</p> <p>(b) plan and implement internally consistent units of study that address the diverse goals of the National Science Education Standards and the needs and abilities of students.</p>									
<p><b>7. Science in the Community.</b> Teachers of science relate their discipline to their local and regional communities, involving stakeholders and using the individual, institutional, and natural resources of the community in their teaching. They actively engage students in science-related studies or activities related to locally important issues. To show that they are prepared to relate science to the community, teachers of science must demonstrate that they:</p> <p>(a) identify ways to relate science to the community, involve stakeholders, and use community resources to promote the learning of science;</p> <p>(b) involve students successfully in activities that relate science to resources and stakeholders in the community or to the resolution of issues important to the community.</p>									
<p><b>8. Assessment.</b> Teachers of science construct and use effective assessment strategies to determine the backgrounds and achievements of learners and facilitate their intellectual, social, and personal development. They assess students fairly and equitably, and require that students engage in ongoing self-assessment. To show that they are prepared to use assessment effectively, teachers of science must demonstrate that they:</p> <p>(a) use multiple assessment tools and strategies to achieve important goals for instruction that are aligned with methods of instruction and the needs of students;</p> <p>(b) use the results of multiple assessments to guide and modify instruction, the classroom environment, or the assessment process;</p> <p>(c) use the results of assessments as vehicles for students to analyze their own learning, engaging students in reflective self-analysis of their own work.</p>									
<p><b>9. Safety and Welfare.</b> Teachers of science organize safe and effective learning environments that promote the success of students and the welfare of all living things. They require and promote knowledge and respect for safety, and oversee the welfare of all living things used in the classroom or found in the field. To show that they are prepared, teachers of science must demonstrate that they:</p> <p>(a) understand the legal and ethical responsibilities of science teachers for the welfare of their students, the proper treatment of animals, and the maintenance and disposal of materials;</p>			X		X				

(b) know and practice safe and proper techniques for the preparation, storage, dispensing, supervision, and disposal of all materials used in science instruction; (c) know and follow emergency procedures, maintain safety equipment, and ensure safety procedures appropriate for the activities and the abilities of students; (d) treat all living organisms used in the classroom or found in the field in a safe, humane, and ethical manner and respect legal restrictions on their collection, keeping, and use.									
<b>(1) A science composite program shall meet the requirements of at least two of the programs listed in subdivisions (2) through (6) of this section;</b>	MATH 151	GENL 255	PHYS 201 or 221	PHYS 202 or 222	PHYS 231	PHYS 371	PHYS 190	PHYS 300 elect	MATH 152
<b>(4) A 7-12 physics education program shall require the demonstrated knowledge and experiences in the systematic, quantitative, and qualitative study of:</b>									
(a) Fundamental principles and laws of physics with emphasis on classical physics, optics, machines, fluid mechanics, kinetic theory, electrostatics, magnetism, electricity, and light;			X	X					
(b) Fundamental atomic and nuclear physics with special emphasis on quantum mechanics, radioactivity, nuclear reactions, elementary particles, and instrumentation;				X		X			
(c) Modern physics with emphasis on relativity, wave theory, statistical mechanics, and solid state; and					X	X			
(d) Astrophysics or space science with emphasis on cosmology, characteristics of solar and galactic systems, instrumentation, and the history of astronomy;			X	X			X		

<b>24:53:07:18. Standards for 7-12 Education Program</b>	EDUC 110	EDUC 219	EDUC 245	EDUC 275	SPED 240	EDUC 310	EDUC 330	EDUC 335	EDUC 345	EDUC 355	NAST 320	ST
(1) Competency in the teaching of content area literacy and instructional methods in the content area specific to the discipline;						X		X				X
(2) Knowledge of the developmental characteristics of the elementary level, middle level, and secondary level learner and of the student with disabilities;			X		X				X			X
(3) Knowledge of curriculum development that uses the South Dakota K-12 content standards as provided in SDCL 13-3-48 and other established K-12 academic standards to design an instructional program that facilitates student achievement and promotes lifelong learning;						X						X
(4) Integrating technology into teaching and learning;		X										X
(5) Completion of a three semester hour course in human relations and a three semester hour course in South Dakota Indian studies;										X	X	
(6) Verification that the candidate has completed studies and field experiences in the following: (a) Design curriculum and instructional strategies for middle level learners; (b) Developmental characteristics of the middle level learner; and (c) Concepts of middle level education or the middle level learner.	X					X	X	X	X			

### **Appendix C—Course Syllabi**

**This appendix includes syllabi from the following courses (specific to the MATH/SCIENCE Composite major):**

1. BIOL 120 General Biology I
2. BIOL 121 General Biology II
3. BIOL 233 Genetics
4. BIOL 234 Cell Biology
5. BIOL 348 Principles of Ecology
6. BIOL 397 Insect Ecology
7. CHEM 116 General Chemistry I
8. CHEM 117 General Chemistry II
9. CHEM 145 Survey of Organic and Biochemistry
10. CHEM 222 Inorganic Chemistry
11. CHEM 242 Analysis
12. GENL 255 Navigating a Diverse Society for Equality in MATH/SCIENCE
13. MATH 151 Calculus I
14. MATH 152 Calculus II
15. MATH 153 Calculus III
16. MATH 200 Foundations of Mathematics
17. MATH 220 Linear Algebra
18. MATH 315 Probability and Statistics
19. PHYS 201 Physics for Life Sciences I
20. PHYS 202 Physics for Life Sciences II
21. PHYS 221 General Physics I
22. PHYS 222 General Physics II
23. PHYS 281 Intermediate Laboratory
24. PHYS 371 Modern Physics

**Plus, additional syllabi for courses needed to complete the 7-12 Secondary Education major:**

1. EDUC 110—Foundations of American Education
2. EDUC 219—Technology in Education
3. EDUC 245-Educational Psychology
4. EDUC 275-Teaching, Learning and Connecting in Today's Classroom
5. EDUC 310—Secondary School Methods (Science and/or Mathematics)
6. EDUC 330—Foundations and Methods-Middle Level
7. EDUC 335—Literacy in the Content Area
8. EDUC 345-Adolescent Development
9. EDUC 355—Human Relations in Education
10. SPED 240—Teaching in Inclusive Schools
11. NAST 320—Native American Studies

**Appendix D**  
**Faculty for MATH/SCIENCE Composite Program**

Faculty Members Teaching Courses in the MATH/SCIENCE Composite Major	Rank	Teaching Assignments	Relevant Preparation and Expertise
Lisa Baye, Ph.D.	Assistant Professor of Biology	-BIOL 120 -BIOL 233 -BIOL 234	- Ph.D., Cell Biology, Neurobiology and Anatomy- Medical College of Wisconsin (2007) - Postdoctoral Fellow, Department of Biology, University of Iowa (2007-2012)
Paul Egland, Ph.D.	Associate Professor of Biology	-BIOL 120 -BIOL 234	- Ph.D., Microbiology -University of Iowa (1997) - Postdoctoral Fellow, National Institutes of Health (2000-2004) - Served as research mentor for 20 undergraduate students - Co-authored two textbook chapters
Jennifer Arens Gubbels, Ph.D.	Associate Professor of Biology	-BIOL 120 -BIOL 121 -BIOL 397	- Ph.D., Endocrinology and Reproductive Physiology - University of Wisconsin-Madison (2009) -Served as research mentor for 11 undergraduate students -Served on Noyce curriculum development team -Brought undergraduates into K-12 classrooms as component of upper-level biology courses
Libby King, M.S	Assistant Professor of Biology	-BIOL 233 -BIOL 234	- M.A. University of Missouri -Kansas City - Involved in the laboratory component of the courses
Mark Larson, Ph.D.	Associate Professor of Biology	-BIOL 233 -BIOL 234 -BIOL 397	- Ph.D., Pharmacology - University of North Carolina-Chapel Hill (2003) - Postdoctoral Fellow, Institute of Cardiovascular Sciences, University of Birmingham, UK (2004-2006) - Mentored 24 undergraduate research students and published 5 peer-reviewed research manuscripts with undergraduate student co-authors. - Campus Coordinator for National Institutes of Health IDeA Networks of Biomedical Research Excellence grant (managing ~\$400,000/year) and the National Science Foundation Experimental Program to Stimulate Competitive Research Infrastructure and Improvement program (managing ~\$150,000/year). - Chair, Augustana SOPHIA General Education Committee and Augustana Research Scholarly Activities Committee.
Amy R. Lewis, Ph.D.	Assistant	-BIOL 120	- Ph.D., Biological Sciences (Wildlife and Fisheries Sciences) South Dakota State University

	Professor of Biology	-BIOL 121 -BIOL 348 -BIOL 336	(2004) -Outdoor Educator Somerset County Park Commission (NJ) (1996-2000) -Director of Summer Programs, Science Visions, Inc. (2007)
Sally Mallowa, Ph.D.	Assistant Professor of Biology	-BIOL 120 -BIOL 121 -BIOL 234	- Ph.D., Plant Pathology - Iowa State University (2015) - Served as mentor for 2 undergraduate students (2015) - Disease management workshop for citizen learners and extension workers (2015-2016)
Steve Matzner, Ph.D.	Professor of Biology	-BIOL 120 -BIOL 121 -BIOL 342 -BIOL 348	- Ph.D., Ecology – University of California-Davis (1999) - Postdoctoral Fellow, Boyce Thompson Inst. for Plant Research - Chair, Department of Biology, 2007-2010, 2011-2012, 2015-2017, 2014-Present - PULSE fellow and Member of the Midwest and Great Plants Regional PULSE Network, 2011-Present - Executive Council member, South Dakota Academy of Science - President of South Dakota Academy of Science, 2015-2016. - Faculty advisor for Augustana Green, the student environmental awareness group on campus, 2001-Present
Cecelia Miles, Ph.D.	Associate Professor of Biology	-BIOL 120 -BIOL 121	- Ph.D., Zoology, “Resolving spatial patterning and egg size in <i>Drosophila</i> ” – University of Florida (2006) - Postdoctoral fellow, Ecology and Evolution, The University of Chicago - Contributed as an invited author for Scitable by Nature Education; A Collaborative Learning Space for Science Undergraduates ( <a href="http://www.nature.com/scitable/">http://www.nature.com/scitable/</a> ) - Contributed a book chapter on “Brain Anatomy”, 2014. In: Learning and the Brain (2 <sup>nd</sup> edition). S. Feinstein (ed). Rowman and Littlefield Education, Lanham, MD, USA.
Carrie Olson-Manning, Ph.D.	Assistant Professor of Biology	-BIOL 120 -BIOL 121	- Ph.D., Biology, Biochemical Evolution of Herbivore Resistance in the Brassicaceae – Duke University (2013) - Postdoctoral Fellow, Ecology and Evolution - Evolution of the corticosteroid synthesis pathway in mammals – University of Chicago (2016)
Craig Spencer, Ph.D.	Professor of Biology	-BIOL 120 -BIOL 348 -BIOL 309 -BIOL 350	- Ph.D., Fisheries and Wildlife, Michigan State University (1984) - 1985-1991 Research Assistant Professor - University of Montana - 25 years of undergraduate research mentoring in field ecology at Augustana and Flathead Lake Biological Station - 2002-2005 Chair of Biology, Augustana - 2014-2016 Orin M. Lofthus Distinguished Professor
Seasson Vitiello, Ph.D.	Associate	-BIOL 233	- Ph.D., Biochemistry, “A yeast model of Batten disease: genetic and physical interactions” -

	Professor of Biology	-BIOL 234	<p>University of Rochester (2008)</p> <ul style="list-style-type: none"> <li>- Postdoctoral fellow, Molecular Biology - University of Rochester and Sanford Research</li> <li>- NSF REU Site in Cellular and Molecular Biology Co-PI</li> <li>- Noyce-MATH/SCIENCE education curriculum team</li> <li>- PI of an active molecular genetics research laboratory at Augustana University</li> <li>- Augustana Pathways Program scientist-instructor (for Native American MS students)</li> <li>- Science Day instructor (for high school students)</li> </ul>
Ann Vogelmann, Ph.D.	Assistant Professor of Biology	-BIOL 120 -BIOL 121 -BIOL 397	<ul style="list-style-type: none"> <li>- Ph.D., Plant Sciences, Indiana University (1985)</li> <li>- Science Educator, Kirby Science Discovery Center, Washington Pavilion of Arts &amp; Science, Sioux Falls (1999-2000)</li> </ul>
Barrett Eichler, Ph.D.	Professor of Chemistry	-CHEM 116 -CHEM 117 -CHEM 145 -CHEM 222	<ul style="list-style-type: none"> <li>- Ph.D., Inorganic Chemistry – University of Wisconsin-Madison (1998)</li> <li>- Frederick C. Kohlmeier Distinguished Teaching Professor Award 2016-2018 at Augustana University.</li> <li>- 15 years of undergraduate research mentoring.</li> <li>- Chemistry Department Chair since 2012.</li> </ul>
Andrew Klose, PhD.	Assistant Professor of Chemistry	-CHEM 116 -CHEM 117	<ul style="list-style-type: none"> <li>- Ph.D., Nuclear Chemistry – University of Michigan (2013)</li> <li>- NSF Graduate Research Fellow (2011 – 2013)</li> <li>- National Research Council Postdoctoral Fellow (2013 – 2015)</li> <li>- University of Jamestown Young Alumni Medallion Recipient (2016)</li> <li>- Member and advocate for diversity and inclusion activities and groups throughout career</li> <li>- Active in science outreach activities including Science Olympiad and Science Fairs</li> </ul>
Jetty L. Duffy-Matzner, Ph.D.	Professor of Chemistry	-CHEM 116 -CHEM 117 -CHEM 145 -CHEM 222 -CHEM 242	<ul style="list-style-type: none"> <li>- Ph.D., Organic Methodology – University of California-Davis (1993)</li> <li>- Ph.D., Organic Methodology – University of California-Davis (1993)</li> <li>-Augustana University Noyce Committee for MATH/SCIENCE education</li> <li>-Steering Committee for ACS Regional &amp; National Meeting Registration &amp; Planning</li> <li>-2013 Diagnostic Undergraduate Chemical Knowledge Committee for the Examinations Institute, Division of Chemical Education, American Chemical Society (ACS)</li> <li>-Vernon and Mildred Niebuhr Faculty Excellence Award for Teaching, Augustana College</li> <li>-2010 Diagnostic Undergraduate Chemical Knowledge Committee for the Examinations Institute, Division of Chemical Education, American Chemical Society (ACS)</li> <li>-2009 First Term Organic Chemistry Examination Committee for the Examinations Institute,</li> </ul>

			<p>Division of Chemical Education, American Chemical Society (ACS), 2<sup>nd</sup> edition.</p> <p>-2008 General Chemistry Examination Committee for the Examinations Institute, Division of Chemical Education, American Chemical Society (ACS).</p> <p>-2006 First Term Organic Chemistry Examination Committee for the Examinations Institute, Division of Chemical Education, American Chemical Society (ACS).</p> <p>-2004 Salutes to Excellence Award from the American Chemical Society</p>
Jared Mays, Ph.D.	Associate Professor of Chemistry	<p>-CHEM 116</p> <p>-CHEM 117</p> <p>-CHEM 145</p>	<ul style="list-style-type: none"> <li>- Ph.D., Pharmaceutical Sciences – University of Wisconsin (2007)</li> <li>- Barry M. Goldwater Scholar in Mathematics, Science and Engineering (2002)</li> <li>- Recipient of Wisconsin Alumni Research Fellowship (2003)</li> <li>- Participant in NIH Chemical Biology Interface Training Grant (2004-2007)</li> <li>- Barry M. Goldwater Scholarship Review Committee (2012-present)</li> <li>- Co-Coordinator for Augustana’s biochemistry major</li> <li>- Research mentor for 18 unique undergraduate students (2010-present)</li> <li>- Medicinal chemistry research program has resulted in 149 presentations (poster/oral), 3 peer-reviewed publications, and 6 fully-funded grant applications (\$133,678, total)</li> <li>- Active participant in South Dakota Biomedical Infrastructure Network (SD BRIN), South Dakota Experimental Program to Stimulate Competitive Research (SD EPSCoR), and Sanford Program for Undergraduate Research (SPUR)</li> </ul>
Andrew Strandjord, Ph.D.	Assistant Professor of Chemistry	<p>-CHEM 116</p> <p>-CHEM 145</p>	<ul style="list-style-type: none"> <li>- Ph.D., Physical/Organic Chemistry – University of Minnesota (1985)</li> <li>- Project Leader within Dow Chemical’s Electronics Materials Department (1985-98)</li> <li>- Director of Engineering at IC Interconnect in Colorado Springs (1999-2005)</li> <li>- VP of Technology at International Microelectronics and Packaging Society (2005-2007)</li> <li>- Operations Manager at PacTech, in Santa Clara, CA (2008-2014)</li> </ul>
Duane E. Weisshaar, Ph.D.	Professor of Chemistry	<p>-CHEM 116</p> <p>-CHEM 117</p> <p>-CHEM 242</p>	<ul style="list-style-type: none"> <li>- Ph.D., Analytical Chemistry – North Dakota State University (1983)</li> <li>Emphasis in instrumentation, especially chromatography and electrochemistry</li> </ul>
Mark Blackburn	Assistant Dean of Students and Director of Diversity & Inclusion	<p>-GENL 255</p>	<ul style="list-style-type: none"> <li>-M.A. in Education, Augustana College 2006-2008</li> <li>-Doctoral Candidate, Ed.D in Higher Education Leadership, currently ABD, University of South Dakota (2014-present)</li> <li>-Consult and direct efforts to advance a comprehensive understanding of social justice, equity, deep diversity issues</li> <li>-Teach several workshops, CEU required</li> </ul>

			<ul style="list-style-type: none"> <li>-Teach <i>Becoming a master student</i> course</li> <li>-Work with organizations, businesses, higher education institutions, Fortune 500 Companies on issues of leadership, race relations, community development, stereotypes, self-esteem, effective communication, and other various career transitions</li> <li>-Teach transferable skill sets that will be used for success in the 21<sup>st</sup> century</li> <li>-Provided instruction to audiences on various performance outcomes, and preparing them to meet challenges in the workplace</li> <li>-Provided instruction that enables Human Resources to ensure compliance in conduct and hiring practices</li> </ul>
Lindsay Erickson, Ph.D.	Assistant Professor of Mathematics	<ul style="list-style-type: none"> <li>-MATH 151</li> <li>-MATH 152</li> <li>-MATH 220</li> <li>-MATH 315</li> </ul>	<ul style="list-style-type: none"> <li>- Ph.D., The Game of Nim on Graphs – North Dakota State University (2011)</li> <li>- Research Experience Abroad</li> <li>- MATH/SCIENCE Center Project Specialist</li> <li>- National Science Foundation GK-12 Program</li> </ul>
Martha Gregg, Ph.D.	Associate Professor of Mathematics	<ul style="list-style-type: none"> <li>-MATH 151</li> <li>-MATH 152</li> <li>-MATH 153</li> <li>-MATH 200</li> <li>-MATH 220</li> <li>-MATH 315</li> </ul>	<ul style="list-style-type: none"> <li>- Ph.D., Mathematics, University of Nebraska</li> <li>- Noyce Capacity Building Grant, Curriculum Team (2015-16); co-PI(2016-17)</li> <li>- Promoting Success for Native American Students, Invited Speaker at North Central Section MAA Meeting, October 2015</li> <li>- Project NEXt consultant, 2015</li> <li>- On <math>C^*</math>-Extreme Maps and <math>*</math>-Homomorphisms of a Commutative <math>C^*</math>-Algebra, <i>Integral Equations and Operator Theory</i>, Vol. 63, No. 3, March, 2009</li> <li>- Project NEXt Fellow, 2009</li> <li>- Teacher, HS mathematics 1987-1997</li> </ul>
Carl Olimb, Ph.D.	Associate Professor of Mathematics	<ul style="list-style-type: none"> <li>-MATH 151</li> <li>-MATH 152</li> <li>-MATH 153</li> <li>-MATH 220</li> <li>-EDUC 310 F</li> </ul>	<ul style="list-style-type: none"> <li>- Ph.D., Topological Dynamics - Montana State University (2010)</li> <li>- "Asymptotic structure in substitution tiling spaces." <i>Ergodic Theory and Dynamical Systems</i> 34.01 (2014): 55-94. APA</li> <li>- Project leader for regional professional development opportunities for in-service teachers (Math and Science Teacher Partnership) 2013-2015</li> <li>- South Dakota Department of Education Math Standards committee</li> </ul>
Curtis Olson, Ph.D.	Assistant Professor of Mathematics	<ul style="list-style-type: none"> <li>-MATH 151</li> <li>-MATH 152</li> <li>-MATH 200</li> <li>-MATH 220</li> </ul>	<ul style="list-style-type: none"> <li>- D.A., Mathematics (Matrix Theory)– Idaho State University (1993)</li> <li>- Teacher, HS mathematics 1970-1980</li> <li>- SDCTM Executive Board 1982-2004</li> <li>- Presentations at SDCTM-SDSTA Joint Conferences and NCTM Regional conferences</li> <li>- Founding member of leadership team for Sioux Falls Area Mathematics Teachers' Circle</li> </ul>

Timothy Sorenson, Ph.D.	Assistant Professor of Mathematics	-MATH 151 -MATH 152 -MATH 153 -MATH 200 -MATH 220 -MATH 315	-Ph.D., Abstract Algebra – Kent State University (1990) -Teacher, 6 District Compact HS Consortium , 1988-89 Talmadge OH, <i>Accelerating students to beyond Calculus</i> -Fulbright Teacher, Technical College Amsterdam, 1993-1994
Drew Alton, Ph.D.	Associate Professor of Physics	-PHYS 221 -PHYS 222 -PHYS 281 -PHYS 371	- Ph.D., Kansas State University (2000) - Particle Astrophysics, specializing in direct dark matter searches - Physics representative on the Teachers Education Committee from 2007-2012 - Grant reviewer for the National Science Foundation
Amy Engebretson, Ph.D.	Adjunct Professor of Physics	-PHYS 201 -PHYS 202	- Ph.D.– Michigan State University (1998) - Condensed matter physics, specializing in tunneling in thin films
Nathan Grau, Ph.D.	Assistant Professor of Physics	-PHYS 221 -PHYS 222 -PHYS 281 -PHYS 371	- Ph.D., Iowa State University (2005) -"Symath/scienceatic Study of high-pT di-jet correlations in nuclear collisions with the PHENIX experiment at RHIC" - Grant reviewer for the National Science Foundation
Eric Wells, Ph.D.	Professor of Physics	-PHYS 221 -PHYS 222 -PHYS 281 -PHYS 371	- Ph.D., Kansas State University (2000) - Atomic and Molecular Physics, specializing in controlled fragmentation - Grant reviewer for the National Science Foundation - Member of the Sioux Falls School District Science Steering Committee 2013-2015 - Physics representative on the Teachers Education Committee from 2012-present
Monica Soukup, Ed.D.	-Associate Professor of Deaf Education, Department of Education	-EDUC 110	*Ed.D in Curriculum and instruction, University of SD *Project manager of two Civitas students' Senior Vocation Project * Evaluated the Academic Program for Deaf and Hard of Hearing Students in the Harrisburg, SD School District <ul style="list-style-type: none"> <li>• Communication/Academic Assessment of deaf and hard of hearing students for parents and various school districts in South Dakota</li> <li>• CED Site reviewer for two Teacher Preparation Programs in Education of the Deaf and Hard of Hearing</li> <li>• Presented with two Augustana students at the Association for College Educators February 11, 2016</li> <li>• Presented to the Outreach consultants at the SD School for the Deaf</li> </ul>

			<ul style="list-style-type: none"> <li>• Presentation at the Sioux Falls School District In-service for district interpreters and itinerant teachers</li> <li>• Presented at the Association of College Educators- Deaf and hard of Hearing , February 21` , 2013</li> </ul>
Perry C. Hanavan, Au.D.	-Assistant Professor, Education Department	-EDUC 219	<ul style="list-style-type: none"> <li>-Au.D. Doctorate in Audiology, Central Michigan University</li> <li>-Serves on national Audiology Awareness Campaign Board</li> <li>-Chairs South Dakota Early Hearing Detection and Intervention Program</li> <li>-Serves on Mitchell Technical Institute Speech Language Pathology Assistant Program Board</li> <li>-Recently served on Sioux Falls School District Technology Committee as representative from Augustana University</li> <li>-Accepted 2017 presentations: Wireless Hearing Assistive Technologies, American Academy of Audiology, April 7, 2017, Indianapolis, IN</li> <li>-New Advances in Hearing Assistive Technologies, Midwest Conference On Deaf Education, June 7, 2017, Sioux Falls, SD</li> <li>- Wireless Hearing Assistive Technologies, Hearing Loss Assn. of America, June 24, 2017, Salt Lake City, UT</li> <li>-Recent Presentations:</li> <li>- Mobile Phones: An Approach to Educating Teens About Recreational NIHL, American Academy of Audiology, April 15, 2016, Phoenix, AZ</li> <li>- A “Universal” Hearing Assistive Technology?, Hearing Loss Association of America, June 24, 2016, Washington, DC</li> </ul>
Sandie Hoover-Kinsinger, Ph.D.	-Assistant Professor, Department of Education	-EDUC 245 -EDUC 345	<ul style="list-style-type: none"> <li>-Ph.D. Human Development and Educational Psychology, University of South Dakota</li> <li>-Schweinle, A., Kinsinger, S. E. H., Los, R. E., Helming, L., Krokstrom, L. A. (August, 2016). Why academic hope matters. In E. A. Dykstra (Chair), <i>What explains academic success? Examining success from unique motivational perspectives</i>. Symposium conducted at the American Psychological Association National Convention, Denver, CO.</li> <li>-Kinsinger, S. E. H. (March, 2016). <i>Hope and academics: Characteristics that predict hopefulness in the classroom</i>. Paper presented at the National Social Science Association Annual Conference, Las Vegas, NV.</li> </ul>
Julie Ashworth, Ed.D.	-Assistant Professor, Department of Education	-EDUC 275 -EDUC 355	<ul style="list-style-type: none"> <li>-Ed.D. Adult and Higher Education, University of South Dakota</li> <li>-Elementary Education teacher in a classroom with diverse student population including ELL and Tribal students and Elementary Education Resource Teacher</li> <li>-Lighting the Way Conference, Committee Member; Autism Spectrum Disorders presenter &amp;</li> </ul>

			<p>SD WALKNOWFORAUTSIM CoChair</p> <ul style="list-style-type: none"> <li>-LIUB Annual Event Coordinator</li> <li>-Director of Augustana FRIENDSLink and secured Sioux Falls United Way Full Partner Agency Grant for Augustana FRIENDSlink program (non-profit organization that connects Augustana College students with young adults with disabilities)</li> <li>-Compassionate Charter SF founding member</li> </ul>
Val Olness, Ph.D.	-Associate Professor of Biology, Science Education, Emeriti	-EDUC 310 H	<ul style="list-style-type: none"> <li>-Dr. Olness has taught Biology and Human Concerns, Life Science for Elementary Teachers, Science Methods for the Elementary Teacher, Science Methods for Secondary Teachers, and Mathematics, Science, and Technology for Elementary and Middle School Teachers.</li> <li>-Her interests include writing-to-learn science and cooperative learning.</li> <li>-She received her Ph.D. from the University of Minnesota.</li> </ul>
Li Sun, Ed.D.	-Assistant Professor, Department of Education	-EDUC 330	<ul style="list-style-type: none"> <li>-Ed. D. Curriculum and Instruction, focusing on Mathematics Education, University of Houston</li> <li>-Certified Mathematics Quality of Instruction (MQI) Rater</li> <li>-Mathematics Department Chair (8 years)</li> <li>-Middle School Teacher (3 years)</li> <li>-High School Teacher (11 years)</li> </ul>
Heidi Sackreiter, Ed.D.	-Assistant Professor, Department of Education	-EDUC 335	<ul style="list-style-type: none"> <li>-Earned a reading minor and endorsement in middle school language arts along with Bachelor's in Elementary Education; Master's in Teaching and Learning; Doctorate in Curriculum and Instruction, dissertation research regarding writing abilities and perceptions of university students;</li> <li>-teaching of English language arts was a significant responsibility when I was a sixth grade teacher (taught writing and grammar to all sixth graders);</li> <li>-taught graduate course (Writing for Learning) and undergraduate course (K-8 Language Arts Methods) during multiple semesters at Northern State University and at South Dakota State University;</li> <li>-experience with ELL students at elementary level and university level (ESL Specialist for International Affairs at South Dakota State University) and have taught reading and writing to those learning English as a new language</li> </ul>
Matthew Johnson, Ed.D.	-Assistant Professor, Department of Education	-SPED 240	<ul style="list-style-type: none"> <li>-Ed.D.. Special Education, University of South Dakota</li> <li>-M.A. in Elementary Education, Augustana College</li> <li>-Council for Exceptional Children, presenter</li> <li>-State of the Art, presenter</li> </ul>

			<ul style="list-style-type: none"><li>-Augie Access, Co-PI</li><li>-Elementary Resource -Teacher: Omaha, NE (1 year)</li><li>-Elementary Resource Teacher: Sioux Falls, SD (7 years)</li><li>-High School SPED Teacher (ED/BD): Chicago, IL (5 years)</li><li>-High School Assistant Basketball Coach (12 years)</li><li>-High School Head Tennis Coach (7 years)</li><li>-Student Council for Exceptional Children (Faculty Advisor)</li><li>-Lighting The Way Conference (Presenter)</li><li>-GreenStar Symposium (Presenter)</li></ul>
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## **Appendix E**

### **Library Facilities and Resources**

Mikkelsen Library was renovated in 2009 blending the original 1954 building with the 1980 addition in a seamless and functional whole. Wireless throughout, highlights include group study rooms, a multimedia lab and studio, *Ole's Oasis*—a browsing collection, fireplace, plentiful comfortable seating, and windows which flood the building with natural light. The library is a member of the South Dakota Library Network (SDLN), a statewide library cooperative providing access to books, government documents, media, and journal articles. A variety of electronic resources including the SDLN database, are made available via the [library's homepage](#). In addition, a cooperative agreement among Sioux Falls public and academic libraries allows students and community members to use resources in libraries across the city.

Resources include a book collection in excess of 254,000 volumes, 19,800 e-books, subscriptions to 580 print journals and over 4,900 electronic journals, 100 electronic databases, many with full-text content, and a selective depository for U.S. government documents. The library's holdings include books, journals, and media specific to education, including databases such as Eric, Sage Journals Online, Gale Professional Development Collection, SPORTdiscus, and Ebsco Teacher Reference Center. Supportive resources related to education of the deaf and hard of hearing, special education, speech and language, and psychology are also part of the collection.

Media Services, a department of the library, offers over 6,600 media programs and a wide range of audiovisual equipment and services including specialized printing and production. The Media Lab and green screen studio provide tools to produce digital multimedia projects using a number of specialized software programs. Media Services staff is available to train and assist faculty and students in the use of technology and software. Two computers with assistive software for use by those with disabilities and a Merlin text enlarger are also available in the Media Lab.

Adjacent to Media Services are the Juvenile Literature and K-12 Curriculum collections. The library collects literature for children and young adults including the best in current offerings, such as Newbery and Caldecott winners, as well as material representative of historical trends. A textbook and curriculum materials collection is available for browsing, and indexed in the online catalog for searching. The collection is current and representative of curriculum materials being used in area schools, and includes information pertaining to the Common Core Standards.

Special collections include the library's rare book collection, housed in the Myklebust Room. The Norwegian collection, consisting of books on subjects relating to Scandinavia, many of which are in Norwegian, and begun with a gift from Maurice P. Dunlap, Consul to Norway from 1936 to 1941. Shortly after the library's renovation, the Sioux Falls Seminary theological collection was integrated into the Augustana library.

Also available to faculty and students is the collection of the Center for Western Studies, located in the Fantle Building adjacent to the library. The Center for Western Studies collects and preserves historical materials relating to South Dakota and the Northern Plains, and manages the Augustana College archives. The Center recently became the permanent home of the Blue Cloud Abbey-American Indian Culture Research Center Collection including more than 4,000 books, 40,000 photographs and various artifacts previously housed at the Benedictine monastery near Marvin, S.D.

The library's collection development policy encourages recommendations from faculty regarding both acquisitions and withdrawals. The library staff use reviews in professional journals and reference sources to maintain a balanced collection. The Media Librarian, liaison to the Education department, works closely with the department to facilitate appropriate acquisition of materials in all formats. While selection of new materials is continuous, collections are evaluated for weeding purposes approximately every three years.

Open and staffed 97.5 hours per week, the library provides an important place for research, collaboration, and quiet study. Wireless access to the Internet is available throughout the library. Although students frequently bring their own laptops and mobile devices, 32 laptops are provided for checkout from the circulation desk, and 18 Internet workstations are also available for library research. Group study rooms, complete with integrated technology, allow students to work collaboratively and to practice presentation skills. In addition to the resources available within its physical space, the library maintains a robust online presence providing remote access to many of its resources. Cooperative agreements allow the library to provide access to an extensive array of additional resources through interlibrary loan, frequently delivered directly to faculty and student email. Reference librarians are available to help with research in person, and via email and chat reference. Knowledgeable staff are always available to assist students in the use of collections, and with technology concerns.

Reserves are delivered in electronic format whenever possible to enhance convenience and accessibility. While the library still maintains a shelf of traditional reserves for items such as DVDs, books, and professors' personal copies; journal articles and multimedia files are made available electronically through Moodle, the password protected course management system used by Augustana, allowing these resources to be accessed remotely.

In addition to the electronic content offered through library databases and reserves, the library works with the Information Technology department to provide a streaming media server where faculty can make specially licensed audio and video content available to students electronically. This is especially beneficial to faculty teaching both traditional and online classes.

In an information rich, democratic society the leaders of the future must be able to use and create information effectively and ethically. The library's program of information literacy features librarians collaborating with faculty in the classroom to ensure that Augustana students know how to locate, evaluate, synthesize and utilize information, regardless of format. While librarians sometimes meet with classes in the instructional centers on campus, they more frequently invite them to come to the library's classroom or large conference room, each with fully integrated presentation technology. Using the laptops and wireless access, students are able to practice information literacy concepts hands-on, as well as gain experience in navigating complex databases with a librarian as guide.