SUNY Potsdam

Student Learning Outcomes Assessment Report

(Revised 03/01/13)

Department/Program Name: MST Adolescence Science Education

Date Submitted and Academic Year: Submitted September 30th, 2016 for Academic Year 2015-2016, 2014-15 and 2013-14.

Department/Program Mission Statement:

All SUNY Potsdam education programs are aligned with our conceptual framework, ***A Tradition of Excellence: Preparing Reflective and Creative Educators.*** Recognizing that the development of professional knowledge, skills and dispositions is essential to the preparation of educators for our public school, all programs and courses seek to develop our candidates' attributes as ***Well-Educated Citizens, Reflective Practitioners, and Principled Educators.***

Well-Educated Citizen: Through their academic major, graduates of the Secondary School Science Education Grades 7-12 program acquire a broad and deep knowledge of the subject matter they will be teaching. They develop appropriate modes of inquiry for their discipline(s) and see a variety of appropriate instructional and assessment techniques modeled by their teachers. They learn to model the skills, attitudes, and values of inquiry appropriate to their discipline while developing a life-long love and curiosity for the subject. Their strong science majors insure that as secondary science education graduates, they have the content knowledge to support the New York Learning Standards appropriate for their certification area.

Reflective Practitioner: Disciplined inquiry begins with helping pre-service teachers develop a sense of themselves as learners. Early in their program they are asked to articulate their philosophy of education and are given the opportunity to identify their own preferred learning styles. By examining their own strengths, weaknesses, and beliefs about learning, they will be better able to provide appropriate instruction for their students. Building on a strong liberal arts foundation, the secondary science teacher education program provides its candidates with an understanding of the pedagogical skills related to effective instruction. These best teaching practices are research-based and represent both general and content specific teaching methodology. Throughout a candidate's program of study they are exposed to research-based models of instruction and assessment, including direct instruction and inquiry learning. They are required to demonstrate their ability to use multiple and effective strategies to teach students with a variety of learning needs and to collaborate with parents and peer professionals. They demonstrate the ability to effectively select and use technology to assist student learning. Throughout the program, they are regularly asked to reflect on their own learning and performance as a way of promoting professional development throughout their careers. Carefully developed sequences of education courses and field-based experiences provide the best learning experiences for pre-service teachers. Working closely with our public school partners, essential experiential opportunities are developed to help teachers to connect the theoretical and experiential aspects of teaching. Written and oral self-reflection on the candidates' own experiences is an integral part of field experience and practicum requirements.

Principled Educator: The secondary science education programs are committed to developing teachers that have professional attitudes, values and dispositions required to positively influence the lives of all of their students. Pre-service teachers must recognize that their teacher education program is the beginning of their journey toward becoming a model teacher. If the journey is to be successful, they must continue to develop as a teacher, be comfortable with uncertainty, be flexible, and be willing to take risks throughout their careers. They must also demonstrate the ability to work well with others and to take responsibility for their own actions. Throughout our programs, we model for our candidates the practices associated with life-long learning, including action research and use of the environment as a pedagogical tool.

Department Assessment Coordinator or Faculty Member Completing this Form: Melissa Cummings

Update on Action Plan(s) from prior year(s):

Intended Student Learning Outcome #1

Students will demonstrate acceptable levels of content knowledge in Biology, Chemistry, Earth Science and/or Physics.

Measurable Criteria and Assessment Method(s)

(What data were collected and how? What unique assessment activities were used to measure student achievement?)

Direct Assessment #1: Content Specialty Tests

The Content Specialty Tests and the Assessment of Teaching Skills-Written assess several of the NSTA standards. The Content Specialty Tests align with the following NSTA Standards:

- ***Standard 1:*** Content: Biology, Chemistry: Subtests 2-6, Earth Science and Physics: Subtests 2-5
- ***Standard 3:*** Inquiry: Biology, Chemistry: Subtests 1 and 7, Earth Science and Physics: Subtests 1 and 6

The Biology CST consists of

I. Foundations of Scientific Inquiry
II. Cell Biology & Biochemistry
III. Genetics & Evolution
IV. Biological Unity & Diversity
V. Human Biology and Ecology

The Chemistry CST consists of

I. Foundations of Scientific Inquiry
II. Matter & Atomic Structure
III. Energy, Chemical Bonds and Molecular Structure
IV. Chemical Reactions
V. Stoichiometry and Solutions
VI. Interactions of Chemistry and the Environment

The Earth Science (Geology) CST consists of

I. Foundations of Scientific Inquiry
II. Space Systems
III. Atmospherics Systems
IV. Geological Systems
V. Water Systems

The Physics CST consists of

I. Foundations of Scientific Inquiry
II. Mechanics and Thermodynamics
III. Electricity and Magnetism
IV. Waves, Sound, and Light
V. Quantum Theory and the Atom

Direct Assessment #2: Overall GPA of Undergraduate Course and Graduate Level GPA

Biology:

BIOL 151 Biology I
BIOL 152 Biology II
BIOL 300 Ecology
BIOL 311 Genetics
One of the following:
BIOL 407 Cell Physiology
BIOL 440 Vertebrate Physiology
BIOL 410 Human Physiology
One of the following:
BIOL 303 Organization/Functions of Plants
BIOL 325 Morphology of Lower Plants and Algae

BIOL 326 Morphology of Higher Land Plants or approved Botany course

Biology Cognate Requirements:

CHEM 105 General Chemistry I CHEM 106 General Chemistry II
CHEM 341 Organic Chemistry I

Chemistry Required Courses:

CHEM 105 General Chemistry 1 CHEM 106 General Chemistry 2
CHEM 341 Organic Chemistry 1 CHEM 342 Organic Chemistry 2
CHEM 311 Quantitative Analysis CHEM 451 Physical Chemistry 1
CHEM 452 Physical Chemistry 2

Chemistry Cognate Requirements:

MATH 151 Calculus I MATH 152 Calculus II
*PHYS 103 General Physics I PHYS 204 General Physics II

Geology Required Courses:

GEOL 103 Physical Geology GEOL 104 Historical Geology
GEOL 301 Sedimentology-Paleontology- Stratigraphy I
GEOL 302 Sedimentology-Paleontology- Stratigraphy II
GEOL 311 Mineralogy GEOL 321 Optics and Petrology
GEOL 405 Structural and Field Geology
GEOL 407 Geophysics I GEOL 420 Geochemistry

Geology Cognate Requirements:

CHEM 105 General Chemistry I CHEM 106 General Chemistry II

Physics Required Courses:

PHYS 103 General Physics I PHYS 204 General Physics II
PHYS 305 General Physics III PHYS 306 Modern Physics

Physics Cognate Requirements:

CHEM 105 General Chemistry I CHEM 106 General Chemistry II
MATH 151 Calculus I MATH 152 Calculus II

Assessment Data Summary - Results & Analysis

Direct Assessment #1: Content Specialty Tests Results

Results:

__80___% of students Exceeding Expectations
_____% of students Meeting Expectations
_____% of students Approaching Expectations
__10___% of students Not Meeting Expectations
__10___% of students did not take the CST

Content Specialty Test: 2015-16

	# of Students	# Passing	# Not Taken	# Failing	% Passing When Taken
Biology	3	2	1		100%
Chemistry					
Geology					
Physics	1	1			100%

Content Specialty Test: 2014-15

	# of Students	# Passing	# Not Taken	# Failing	% Passing When Taken
Biology	4	3		1	75%
Chemistry	1	1			100%
Geology	1	1			100%
Physics					

Content Specialty Test: 2013-14

	# of Students	# Passing	# Not Taken	# Failing	% Passing When Taken
Biology	6	4	1	1	67%
Chemistry	3	3			100%
Geology	1	1			100%
Physics					

Direct Assessment #2: Overall GPA of Undergraduate Course Grades and Graduate Level GPA

Results of Undergraduate GPAs:

__53___% of students Exceeding Expectations
__42___% of students Meeting Expectations
__ 5___% of students Approaching Expectations
_____% of students Not Meeting Expectations

Results of Graduate GPAs:

__100___% of students Exceeding Expectations
_____% of students Meeting Expectations
_____% of students Approaching Expectations
_____% of students Not Meeting Expectations

Undergraduate GPA 2015-16

	Biology	Chemistry	Geology	Physics
4				
3.7				1
3.5				
3.3	1			
3	2			
2.7				
2.3				
2				
1				
0				

Graduate GPA 2015-16

	Biology	Chemistry	Geology	Physics
4	1			1
3.7	2			
3.5				
3.3				
3				
2.7				
2.3				
2				
1				
0				

Undergraduate GPA 2014-15

	Biology	Chemistry	Geology	Physics
4				
3.7	1	1		
3.5			1	
3.3				
3	2			
2.7				
2.3				
2				
1				
0				

Graduate GPA 2014-15

	Biology	Chemistry	Geology	Physics
4	2	1	1	
3.7	1			
3.5				
3.3				
3				
2.7				
2.3				
2				
1				
0				

Undergraduate GPA 2013-14

	Biology	Chemistry	Geology	Physics
4				
3.7		1		
3.5	2		1	
3.3		1		
3	3	1		
2.7	1			
2.3				
2				
1				
0				

Graduate GPA 2013-14

	Biology	Chemistry	Geology	Physics
4	2	2	1	
3.7	3	1		
3.5				
3.3	1			
3				
2.7				
2.3				
2				
1				
0				

Application of Results/Action Plan for Improving Student Achievement

(*Did you find the assessment(s) used effectively captured how students were performing in the above outcome? How have the assessment results been used to improve teaching and learning? How will the results be used to improve student achievement of the outcome listed above?)*

Analysis of the data from this section is limited due to the small numbers of students completing the undergraduate program. Direct Assessment #1, the Content Specialty Test consist of multiple-choice questions and a written constructed response. CSTs measure knowledge and skills in the content area of the candidate's field of certification. Scores within sub areas that were above 220, candidates had satisfactorily addressed the NSTA Standards 1 and 3. Students are given a firm understanding of their science content area during their undergraduate studies which transfers to their Content Specialty Test scores. The goal is to share results with our science content colleagues to explore ways to strengthen the program and to have teacher candidates' work with our writing specialist, Eudora Watson, who was hired to help Teacher Candidates with the Constructed Response section of the Content Specialty Test. There are some discrepancies in the number of students who were successful in passing the exam as two students have not yet taken the Content Specialty Test due to financial reasons and one decided not to enter into the field of education while other students took more than one CST to earn dual certification.

The data strongly demonstrates that our science education candidates are able to successfully complete the required coursework with a majority meeting or exceeding expectations. The data indicates that the instruction provided by the science departments in the School of Arts and Sciences is preparing our teacher candidates well to pursue a

teaching certificate in secondary science education. Through the completion of each of the required courses within their specific science major, the teacher candidates were taught the major concepts, principles, theories, laws, and interrelationships of their field of study and eventual area of licensure.

Intended Student Learning Outcome #2

Students will demonstrate pedagogical and professional knowledge, skills and dispositions.

Measurable Criteria and Assessment Method(s)
(What data were collected and how? What unique assessment activities were used to measure student achievement?)

Direct Assessment #1: Inquiry-Based Science Unit and Curriculum Plan

The Inquiry -Based science unit has several functions and addresses the NSTA standards of Content Knowledge in the curriculum (1a-c), Content Pedagogy (2a-c), general skills of teaching (3a-d) and impact on students learning (5a-c). This assessment familiarizes candidates with the inquiry-based method of instruction. Science is strongly influenced through inquiry, candidates need to replace the teacher driven strategy of lecture and notes with the student-driven strategy of scientific inquiry. The *5e's model* of instruction provides a structure for carrying out inquiry-based lessons that allows candidates to design and carry out investigations that will provide data from which they can develop concepts and relationships from their interpretation of their data. Candidates design lesson activities within their science units that demonstrate how their students will learn through reading, listening, written presentation, data collection, organization of written material, and oral presentation through an inquiry-based methodology. They have learned how to access these standards as well as to understand how they can be arranged to enhance their ability to plan short range and long range learning units. Though this assignment, candidates learn how to plan units of instruction that are consistent not only with their individual goals and objectives but also with reference to the school wide curriculum. They understand that planning their individualized classroom curriculum is only one part of the larger school-wide curriculum and that they must plan not only with the content in mind but also with the goals and objectives of the larger curriculum in mind. Finally, our candidates find that using five stages of instruction provides them the opportunity to use five different instructional strategies and to implement a variety of assessments throughout the unit, thereby increasing dramatically their students' ability to be successful at learning science. The variety of assessments allows the candidates to evaluate their teaching based on student learning but also allows students to self-evaluate their learning. Through the completion of this requirement teacher candidates demonstrate their understanding of curriculum as not only content but as a plan based on school wide philosophies, goals, and strategies. It also provides them with the opportunity to demonstrate their ability to identify, access and or create resources and activities for science activities for science education that are consistent with the standards. Teacher candidates are also able to describe the ways in which they will meet the variety of needs and abilities of their students.

Direct Assessment #2: Science Form 5
This assessment is currently aligned with the ten principles of the "Model Standards in Science Beginning Teacher Licensing and Development, "established by the Interstate New Teacher Assessment and Support Consortium (INTASC) Standards Drafting Committee. By addressing each of the INTASC criteria, the teacher candidate also addresses all of the National Science Teacher Association Standards for Pre-Service Teachers:

- Standard 1: Content Knowledge: Effective teachers of science understand and articulate the knowledge and practices of contemporary science. They interrelate and interpret important concepts, ideas, and applications in their fields of licensure.

  1a) Understand the major concepts, principles, theories, laws, and interrelationships of their fields of licensure and supporting fields as recommended by the National Science Teachers Association.

  1b) Understand the central concepts of the supporting disciplines and the supporting role of science specific technology.

  1c) Show an understanding of state and national curriculum standards and their impact on the content knowledge necessary for teaching P-12 students.
- Standard 2: Content Pedagogy Effective teachers of science understand how students learn and develop scientific knowledge. Preservice teachers use scientific inquiry to develop this knowledge for all students.

2a) Plan multiple lessons using a variety of inquiry approaches that demonstrate their knowledge and understanding of how all students learn science.

2b) Include active inquiry lessons where students collect and interpret data in order to develop and communicate concepts and understand scientific processes, relationships and natural patterns from empirical experiences. Applications of science-specific technology are included in the lessons when appropriate.

2c) Design instruction and assessment strategies that confront and address naïve concepts/preconceptions.

- Standard 3: Learning Environments Effective teachers of science are able to plan for engaging all students in science learning by setting appropriate goals that are consistent with knowledge of how students learn science and are aligned with state and national standards. The plans reflect the nature and social context of science, inquiry, and appropriate safety considerations. Candidates design and select learning activities, instructional settings, and resources--including science-specific technology, to achieve those goals; and they plan fair and equitable assessment strategies to evaluate if the learning goals are met.

  3a) Use a variety of strategies that demonstrate the candidates' knowledge and understanding of how to select the appropriate teaching and learning activities – including laboratory or field settings and applicable instruments and/or technology- to allow access so that all students learn. These strategies are inclusive and motivating for all students.

  3b) Develop lesson plans that include active inquiry lessons where students collect and interpret data using applicable science-specific technology in order to develop concepts, understand scientific processes, relationships and natural patterns from empirical experiences. These plans provide for equitable achievement of science literacy for all students.

  3c) Plan fair and equitable assessment strategies to analyze student learning and to evaluate if the learning goals are met. Assessment strategies are designed to continuously evaluate preconceptions and ideas that students hold and the understandings that students have formulated.

  3d) Plan a learning environment and learning experiences for all students that demonstrate chemical safety, safety procedures, and the ethical treatment of living organisms within their licensure area.
- Standard 4: Safety Effective teachers of science can, in a P-12 classroom setting, demonstrate and maintain chemical safety, safety procedures, and the ethical treatment of living organisms needed in the P-12 science classroom appropriate to their area of licensure.

  4a) Design activities in a P-12 classroom that demonstrate the safe and proper techniques for the preparation, storage, dispensing, supervision, and disposal of all materials used within their subject area science instruction.

  4b) Design and demonstrate activities in a P-12 classroom that demonstrate an ability to implement emergency procedures and the maintenance of safety equipment, policies and procedures that comply with established state and/or national guidelines. Candidates ensure safe science activities appropriate for the abilities of all students.

  4c) Design and demonstrate activities in a P-12 classroom that demonstrate ethical decision-making with respect to the treatment of all living organisms in and out of the classroom. They emphasize safe, humane, and ethical treatment of animals and comply with the legal restrictions on the collection, keeping, and use of living organisms.
- Standard 5: Impact on Student Learning Effective teachers of science provide evidence to show that P-12 students' understanding of major science concepts, principles, theories, and laws have changed as a result of instruction by the candidate and that student knowledge is at a level of understanding beyond memorization. Candidates provide evidence for the diversity of students they teach.

  5a) Collect, organize, analyze, and reflect on diagnostic, formative and summative evidence of a change in mental functioning demonstrating that scientific knowledge is gained and/or corrected.

  5b) Provide data to show that P-12 students are able 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.

5c) Engage students in developmentally appropriate inquiries that require them to develop concepts and relationships from their observations, data, and inferences in a scientific manner.

- Standard 6: Professional Knowledge and Skills Effective teachers of science strive continuously to improve their knowledge and understanding of the ever changing knowledge base of both content, and science pedagogy, including approaches for addressing inequities and inclusion for all students in science. They identify with and conduct themselves as part of the science education community.

  6a) Engage in professional development opportunities in their content field such as talks, symposiums, research opportunities, or projects within their community.

  6b) Engage in professional development opportunities such as conferences, research opportunities, or projects within their community.

Results & Analysis

Direct Assessment #1: Inquiry-Based Science Unit and Curriculum Plan Results

Results:

__100_% of students Exceeding Expectations
_____% of students Meeting Expectations
_____% of students Approaching Expectations
_____% of students Not Meeting Expectations

Unit Plan: 2015-16

	Biology	Chemistry	Geology	Physics
4	2			1
3.7	1			
3.5				
3.3				
3				
2.7				
2.3				
2				
1				
0				

Unit Plan: 2014-15

	Biology	Chemistry	Geology	Physics
4	3	1	1	
3.7				
3.5				
3.3				
3				
2.7				
2.3				
2				
1				
0				

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Unit Plan: 2013-14

	Biology	Chemistry	Geology	Physics
4	3	2	1	
3.7	2	1		
3.5				
3.3	1			
3				
2.7				
2.3				
2				
1				
0				

Curriculum Plan

Results:

__100_% of students Exceeding Expectations
_____% of students Meeting Expectations
_____% of students Approaching Expectations
_____% of students Not Meeting Expectations

Curriculum Plan 2015-16

	Biology	Chemistry	Geology	Physics
4	3			1
3.7				
3.5				
3.3				
3				
2.7				
2.3				
2				
1				
0				

Curriculum Plan: 2014-15

	Biology	Chemistry	Geology	Physics
4	2	1	1	
3.7	1			
3.5				
3.3				

3				
2.7				
2.3				
2				
1				
0				

Curriculum Plan: 2013-14

	Biology	Chemistry	Geology	Physics
4	2	3	1	
3.7	4			
3.5				
3.3				
3				
2.7				
2.3				
2				
1				
0				

Direct Assessment #2: Science Form 5 Results

Results:

_ 74 _% of students Exceeding Expectations
_ 26 _% of students Meeting Expectations
_____% of students Approaching Expectations
_____% of students Not Meeting Expectations

Form Five Overall Grade: 2015-16

	Biology	Chemistry	Geology	Physics
3	2			
2.7				1
2.5				
2.3				
2	1			
1.7				
1.5				
1.3				
1				
0				

Form Five Overall Grade: 2014-15

	Biology	Chemistry	Geology	Physics
3				
2.7	2		1	
2.5		1		
2.3	1			
2				
1.7				
1.5				
1.3				
1				
0				

Form Five Overall Grade: 2013-14

	Biology	Chemistry	Geology	Physics
3				
2.7	1	2		
2.5	3		1	
2.3	2			
2	1			
1.7				
1.5				
1.3				
1				
0				

Application of Results/Action Plan for Improving Student Achievement

(*Did you find the assessment(s) used effectively captured how students were performing in the above outcome? How have the assessment results been used to improve teaching and learning? How will the results be used to improve student achievement of the outcome listed above?)*

All candidates completing the interdisciplinary science unit and curriculum plan received a rating of Proficient or higher for each of the NSTA standards' criteria contained within the assessment rubrics, indicating that each candidate has demonstrated a basic understanding of the concepts involved in the planning of inquiry based instruction within the parameters of a curriculum plan that considers the long range goals and objectives of instruction. Analysis of the data from these Unit plans and Curriculum Plan is limited due to the small numbers of students completing the undergraduate program. However, it does show that all of the students' unit plans were able to pass and rank in the Proficient or Distinguished levels. The students Curriculum Plans were all able to meet the requirements. The data from the Form 5 assessment indicates the degree to which each of the INTASC standards and NSTA teacher preparation standards and their subsections have been addressed. Scores for this assessment were arrived at through a collaboration of the teacher candidate, mentor teacher, and student teacher supervisor. The Form 5 is on a 3.0 grading scale. Teacher Candidates met at the 4, 8, 12, and 16-week intervals for formative and summative assessment. They arrived at a score by consensus and after the direct observation of teaching and inspection of planning and teaching documents. Through this process it was established all standards had been addressed in a satisfactory manner. The collaborative method through which grades were reached provides a very strong reflective and planning experience that helps our candidates reach their full potential

as a teacher in training. It promotes continued reflective practice on the part of our teacher candidates as they move into the teaching profession. Analysis of the data from the 8 and 16 Week completion of the Form 5 is limited due to the small numbers of students completing the undergraduate program. However, it does show that all students' unit plans were able to pass the Standards. The data analysis displays a 100% passing rate and students scoring.

Intended Student Learning Outcome #3

Teacher candidates will demonstrate their knowledge of safety in a science classroom.

Measurable Criteria and Assessment Method(s)
(What data were collected and how? What unique assessment activities were used to measure student achievement?)

Direct Assessment #1: Classroom/Laboratory Safety Plan
The completed classroom/laboratory safety plan will demonstrate the teacher candidate's knowledge in the areas of teacher responsibility, emergency procedures, knowledge of proper and safe techniques and the proper care of living things as well as their ability to plan for the instruction of their students in these same areas. The successful accomplishment of this assignment is directly aligned with NSTA standards 9a-d Safety and Welfare and provides evidence for addressing these standards.

Results & Analysis

Direct Assessment #1: Classroom/Laboratory Safety Plan Results

Results:

_100_% of students Exceeding Expectations
_____% of students Meeting Expectations
_____% of students Approaching Expectations
_____% of students Not Meeting Expectations

Safety Plan: 2015-16

	Biology	Chemistry	Geology	Physics
4	2			1
3.7	1			
3.5				
3.3				
3				
2.7				
2.3				
2				
1				
0				

Safety Plan: 2014-15

	Biology	Chemistry	Geology	Physics
4	2	1	1	
3.7	1			
3.5				

3.3				
3				
2.7				
2.3				
2				
1				
0				

Safety Plan: 2013-14

	Biology	Chemistry	Geology	Physics
4	3	3	1	
3.7	3			
3.5				
3.3				
3				
2.7				
2.3				
2				
1				
0				

Application of Results/Action Plan for Improving Student Achievement
(*Did you find the assessment(s) used effectively captured how students were performing in the above outcome? How have the assessment results been used to improve teaching and learning? How will the results be used to improve the student achievement of the outcome listed above?)*

All candidates completing the GRED 673 Secondary Science Field Experience received a rating of 4 (Distinguished) to 3.7 (Highly Proficient) of the NSTA standard 4a-c criteria contained within the assessment rubrics, indicating that each candidate has demonstrated a proficient understanding of the concepts involved in Safety and Welfare. Analysis of the data from the Safety Plan is limited due to the small numbers of students completing the undergraduate program.

Intended Student Learning Outcome #4

Students will demonstrate acceptable levels of their ability to research current topics within their field of licensure (Biology, Chemistry, Earth Science and/or Physics).

Measurable Criteria and Assessment Method(s)
(What data were collected and how? What unique assessment activities were used to measure student achievement?)

Direct Assessment #1: Research paper: This assessment provides data to support assessment of our candidates with respect to NSTA standards 1 a-c, 2 a-c, 3 a-d, and 6 a-b. Within GRED 501 and GRED 502, the research paper rubric evaluates the candidate's contribution to class members understanding of inquiry processes, content, assumptions and goals distinguishing science and technology from other ways of knowing. Candidates are also evaluated for their understanding of socially important science and technology issues, and the processes used to analyze issues and make informed decisions.

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Results & Analysis

Direct Assessment #1: Research paper Results

Results:

__95 _% of students Exceeding Expectations
__5 __% of students Meeting Expectations
_____% of students Approaching Expectations
_____% of students Not Meeting Expectations

Research Paper: 2015-16

	Biology	Chemistry	Geology	Physics
4	1			1
3.7	1			
3.5	1			
3.3				
3				
2.7				
2.3				
2				
1				
0				

Research Paper: 2014-15

	Biology	Chemistry	Geology	Physics
4	2	1	1	
3.7	1			
3.5				
3.3				
3				
2.7				
2.3				
2				
1				
0				

Research Paper: 2013-14

	Biology	Chemistry	Geology	Physics
4	1	3	1	
3.7	2			
3.5	2			
3.3				
3	1			

2.7				
2.3				
2				
1				
0				

Application of Results/Action Plan for Improving Student Achievement
(*Did you find the assessment(s) used effectively captured how students were performing in the above outcome? How have the assessment results been used to improve teaching and learning? How will the results be used to improve student achievement of the outcome listed above?)*

All candidates completing the "GRED 502: Issues in Science and Technology" and "GRED 501: Seminar: Teaching Science in the Secondary Schools" course in the Graduate portion of their program received a Course Grade of Excellent (4) to Proficient (3.5) indicating that each candidate has demonstrated a proficient understanding of the Science content in their field of Licensure. Analysis of the data of the Research Paper and Presentation is limited due to the small numbers of students completing the undergraduate program.

(Additional Intended Student Learning Outcomes can be added if required)

Summary of Action Plans for upcoming Academic Year _____
1. Students will be completing assessments that are aligned with the edTPA
2. Students will continue to attend conferences to add to the Professional Education
3.
4.
5.
6.
7.
8.