Program Outcomes Assessment

BA/BS in Science Education

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General Information (Program Outcomes Assessment)

File Attachments:

1. **NCATE Report Science Education 2004** (See appendix)
2. **Science Education Biology Assessment 2008-2009** (See appendix)
3. **Science Education Chemistry Assessment 2008-2009** (See appendix)
4. **Science Education Earth/Space Science Assessment 2008-2009** (See appendix)

Standing Requirements

Mission Statement

A member of the College of Arts and Sciences, Science Education cooperates with the other science departments and maintains close ties with the College of Education to provide a unique and nationally recognized program for the development of professional, certified science educators in any combination of two areas: biology, chemistry, earth/space, and physics.

Outcomes Library

BA/BS in Science Education Outcome Set

1. Content

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:

Outcome	Mapping
1(a) understand major concepts, principles, theories, laws, and interrelationships 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	No Mapping
1(b) understand the unifying concepts of science understand and can successfully convey to students the unifying concepts of science delineated by the National Science Education Standards	No Mapping
1(c) understand important personal and technological applications understand and can successfully convey to students important personal and technological applications of science in their fields of licensure	No Mapping
1(d) understand research understand research and can successfully design, conduct, report and evaluate investigations in science	No Mapping
1(e) understand mathematics to process and report data understand and can successfully use mathematics to process and report data, and solve problems, in their field(s) of licensure	**Foundational Studies:** IIIa. Quantitative Literacy

2. Nature of Science

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:

Outcome	Mapping
2(a) understand historical and cultural development of science understand the historical and cultural development of science and the evolution of knowledge in their discipline	No Mapping
2(b) understand the philosophical tenets, assumptions, goals, and values understand the philosophical tenets, assumptions, goals, and values that distinguish science from technology and from other ways of knowing the world	No Mapping
2(c) engage students in studies of the nature of science 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	**Foundational Studies:** 2. Critically evaluate the ideas of others.

3. Inquiry

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:

Outcome	Mapping
3(a) understand the methods of injuiry understand the processes, tenets, and assumptions of multiple methods of inquiry leading to scientific knowledge	No Mapping
3(b) engage students in inquires engage students successfully in developmentally appropriate inquiries that require them to develop concepts and relationships from their observations, data, and inferences in a scientific manner	**Foundational Studies:** IIIa. Quantitative Literacy

4. Issues

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:

Outcome	Mapping
4(a) understand socially important issues related to science 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	No Mapping
4(b) engage students in the analysis of problems 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	No Mapping

5. General Skills of Teaching

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:

Outcome	Mapping
5(a) vary teaching methods vary their teaching actions, strategies, and methods to promote the development of multiple student skills and levels of understanding	No Mapping

5(b) promote the learning of science by diverse students successfully promote the learning of science by students with different abilities, needs, interests, and backgrounds	No Mapping
5(c) organize and engage students in collaborative learning successfully organize and engage students in collaborative learning using different student group learning strategies;	No Mapping
5(d) use technological tools successfully use technological tools, including but not limited to computer technology, to access resources, collect and process data, and facilitate the learning of science	No Mapping
5(e) understand and build upon prior knowledge of students understand and build effectively upon the prior beliefs, knowledge, experiences, and interests of students	No Mapping
5(f) maintain a safe and supportive environment create and maintain a psychologically and socially safe and supportive learning environment	No Mapping

6. Curriculum

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:

Outcome	Mapping
6(a) understand curricular recommendations 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	No Mapping
6(b) plan units of study 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	No Mapping

7. Science in the Community

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:

Outcome	Mapping
7(a) relate science to the community identify ways to relate science to the community, involve stakeholders, and use community resources to promote the learning of science	No Mapping
7(b) involve students in activities that relate science to the community 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	No Mapping

8. Assessment

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:

Outcome	Mapping

8(a) use multiple assessment tools and strategies use multiple assessment tools and strategies to achieve important goals for instruction that are aligned with methods of instruction and the needs of students;	No Mapping
8(b) use assessment results to guide instruction use the results of multiple assessments to guide and modify instruction, the classroom environment, or the assessment process	**Foundational Studies:** IIIa. Quantitative Literacy
8(c) use assessment results to engage students in self-analysis use the results of assessments as vehicles for students to analyze their own learning, engaging students in reflective self-analysis of their own work	No Mapping

9. Safety and Welfare

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:

Outcome	Mapping
9(a) understand the legal and ethical responsibilities 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	No Mapping
9(b) know and practice proper techniques for the use of materials know and practice safe and proper techniques for the preparation, storage, dispensing, supervision, and disposal of all materials used in science instruction	No Mapping
9(c) know and follow safety procedures know and follow emergency procedures, maintain safety equipment, and ensure safety procedures appropriate for the activities and the abilities of students	No Mapping
9(d) treat all living organisms in an ethical manner 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	No Mapping

10. Professional Growth

Teachers of science strive continuously to grow and change, personally and professionally, to meet the diverse needs of their students, school, community, and profession. They have a desire and disposition for growth and betterment. To show their disposition for growth, teachers of science must demonstrate that they:

Outcome	Mapping
10(a) engage in professional learning and leadership engage actively and continuously in opportunities for professional learning and leadership that reach beyond minimum job requirements	No Mapping
10(b) reflect upon teaching reflect constantly upon their teaching and identify ways and means through which they may grow professionally	No Mapping
10(c) improve teaching and facilitate professional growth use information from students, supervisors, colleagues and others to improve their teaching and facilitate their professional growth	No Mapping
10(d) foster positive relationships interact effectively with colleagues, parents, and students; mentor new colleagues; and foster positive relationships with the community	No Mapping

Curriculum Map

There are no curriculum maps

Communication of Outcomes

Archive (This area is to be used for archiving pre-TaskStream assessment data and for current documents.)

Archive

File Attachments:

1. **Science Education - SPA Report - February 2012.pdf** (See appendix)
2. **Science Education - SPA Report - March 2011** (See appendix)

2012-2013 Assessment Cycle

- **Assessment Plan**
- **Assessment Findings**
- **Action Plan**
- **Status Report**

2013-2014 Assessment Cycle

Assessment Plan

Outcomes and Measures

BA/BS in Science Education Outcome Set

1. Content

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1(a) understand major concepts, principles, theories, laws, and interrelationships

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

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Grades in Core Content Classes by Licensure area
Direct - Other

Details/Description: Assessment of content knowledge in conceptual science area to be taught

Target:

Implementation Plan (timeline): SE advisors and the SE coordinator monitor on a semester by semester basis

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: PRAXIS II
Direct - Exam

Details/Description: Content knowledge
State licensure exam

Target:

Implementation Plan (timeline): Completion of program

Responsible Individual(s):

Measure: Survey of research and investigation content knowledge
Indirect - Survey

Details/Description: Content knowledge- Research & Investigation
•SCED398 Survey for experience of scientific investigation

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

1(b) understand the unifying concepts of science

understand and can successfully convey to students the unifying concepts of science delineated by the National Science Education Standards

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Grades in Core Content Classes by Licensure area
Direct - Other

Details/Description: Assessment of content knowledge in conceptual science area to be taught

Target:

Implementation Plan (timeline): SE advisors and the SE coordinator monitor on a semester by semester basis

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan

•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: PRAXIS II
Direct - Exam

Details/Description: Content knowledge
State licensure exam

Target:

Implementation Plan (timeline): Completion of program

Responsible Individual(s):

Measure: Survey of research and investigation content knowledge
Indirect - Survey

Details/Description: Content knowledge- Research & Investigation
•SCED398 Survey for experience of scientific investigation

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

1(c) understand important personal and technological applications

understand and can successfully convey to students important personal and technological applications of science in their fields of licensure

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Grades in Core Content Classes by Licensure area
Direct - Other

Details/Description: Assessment of content knowledge in conceptual science area to be taught

Target:

Implementation Plan (timeline): SE advisors and the SE coordinator monitor on a semester by semester basis

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Survey of research and investigation content knowledge
Indirect - Survey

Details/Description: Content knowledge- Research & Investigation
•SCED398 Survey for experience of scientific investigation

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

1(d) understand research

understand research and can successfully design, conduct, report and evaluate investigations in science

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Survey of research and investigation content knowledge
Indirect - Survey

Details/Description: Content knowledge- Research & Investigation
•SCED398 Survey for experience of scientific investigation

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

1(e) understand mathematics to process and report data

understand and can successfully use mathematics to process and report data, and solve problems, in their field(s) of licensure

Measure: Grades in Core Content Classes by Licensure area
Direct - Other

Details/Description: Assessment of content knowledge in conceptual science area to be taught

Target:

Implementation Plan (timeline): SE advisors and the SE coordinator monitor on a semester by semester basis

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: PRAXIS II
Direct - Exam

Details/Description: Content knowledge
State licensure exam

Target:

Implementation Plan (timeline): Completion of program

Responsible Individual(s):

Measure: Survey of research and investigation content knowledge
Indirect - Survey

Details/Description: Content knowledge- Research & Investigation
•SCED398 Survey for experience of scientific investigation

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

2. Nature of Science

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:

2(a) understand historical and cultural development of science

understand the historical and cultural development of science and the evolution of knowledge in their discipline

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

2(b) understand the philosophical tenets, assumptions, goals, and values

understand the philosophical tenets, assumptions, goals, and values that distinguish science from technology and from other ways of knowing the world

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

2(c) engage students in studies of the nature of science

engage students

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

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

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

3. Inquiry

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:

3(a) understand the methods of injuiry

understand the processes, tenets, and assumptions of multiple methods of inquiry leading to scientific knowledge

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans

•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

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Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
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Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Survey of research and investigation content knowledge
Indirect - Survey

Details/Description: Content knowledge- Research & Investigation
•SCED398 Survey for experience of scientific investigation

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

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Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

3(b) engage students in inquires

engage students successfully in developmentally appropriate inquiries that require them to develop concepts and relationships from their observations, data, and inferences in a scientific manner

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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

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Direct - Student Artifact

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Responsible Individual(s):

4(b) engage students in the analysis of problems

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

Measure: Lesson plans, project, and finding resources
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Measure: Planning instruction
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Responsible Individual(s):

5. General Skills of Teaching

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5(a) vary teaching methods

vary their teaching actions, strategies, and methods to promote the development of multiple student skills and levels of understanding

Measure: Final evaluation of clinical practice
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Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

5(b) promote the learning of science by diverse students

successfully promote the learning of science by students with different abilities, needs, interests, and backgrounds

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

5(c) organize and engage students in collaborative learning

successfully organize and engage students in collaborative learning using different student group learning strategies;

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

5(d) use technological tools

successfully use technological tools, including but not limited to computer technology, to access resources, collect and process data, and facilitate the learning of science

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

5(e) understand and build upon prior knowledge of students

understand and build effectively upon the prior beliefs, knowledge, experiences, and interests of students

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

5(f) maintain a safe and supportive environment

create and maintain a psychologically and socially safe and supportive learning environment

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions

•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

6. Curriculum

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:

6(a) understand curricular recommendations

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

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan

•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

6(b) plan units of study

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

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

7. Science in the Community

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:

7(a) relate science to the community

identify ways to relate science to the community,

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

involve stakeholders, and use community resources to promote the learning of science

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

7(b) involve students in activities that relate science to the community

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

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

8. Assessment

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:

8(a) use multiple assessment tools and strategies

use multiple assessment tools and strategies to achieve important goals for instruction that are aligned with methods of instruction and the needs of students;

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

8(b) use assessment results to guide instruction

use the results of multiple assessments to guide and modify instruction, the classroom environment, or the assessment process

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Effects on student learning
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

8(c) use assessment results to engage students in self-analysis

use the results of assessments as vehicles for students to analyze their own learning, engaging students in reflective self-analysis of their own work

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan

•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

9. Safety and Welfare

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:

9(a) understand the legal and ethical responsibilities

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

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Safety module
Direct - Student Artifact

Details/Description: Pedagogical and professional knowledge, skills and dispositions- Legal/Safety/Ethical Issues
•SCED398L safety module

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to

student teaching

Responsible Individual(s):

9(b) know and practice proper techniques for the use of materials

know and practice safe and proper techniques for the preparation, storage, dispensing, supervision, and disposal of all materials used in science instruction

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Safety module
Direct - Student Artifact

Details/Description: Pedagogical and professional knowledge, skills and dispositions- Legal/Safety/Ethical Issues
•SCED398L safety module

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

9(c) know and follow safety procedures

know and follow emergency procedures, maintain safety equipment, and ensure safety procedures appropriate for the activities and the abilities of students

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Safety module
Direct - Student Artifact

Details/Description: Pedagogical and professional knowledge, skills and dispositions- Legal/Safety/Ethical Issues
•SCED398L safety module

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

9(d) treat all living organisms in an ethical manner

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

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Safety module
Direct - Student Artifact

Details/Description: Pedagogical and professional knowledge, skills and dispositions- Legal/Safety/Ethical Issues
•SCED398L safety module

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to

student teaching

Responsible Individual(s):

10. Professional Growth

Teachers of science strive continuously to grow and change, personally and professionally, to meet the diverse needs of their students, school, community, and profession. They have a desire and disposition for growth and betterment. To show their disposition for growth, teachers of science must demonstrate that they:

10(a) engage in professional learning and leadership

engage actively and continuously in opportunities for professional learning and leadership that reach beyond minimum job requirements

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

10(b) reflect upon teaching

reflect constantly upon their teaching and identify ways and means through which they may grow professionally

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

10(c) improve teaching and facilitate professional growth

use information from students, supervisors, colleagues and others to improve their teaching and facilitate their professional growth

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

10(d) foster positive relationships

interact effectively with colleagues, parents, and students; mentor new colleagues; and foster positive relationships with the community

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Assessment Findings

Finding per Measure

BA/BS in Science Education Outcome Set

1. Content

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:

1(a) understand major concepts, principles, theories, laws, and interrelationships

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

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Grades in Core Content Classes by Licensure area
Direct - Other

Details/Description: Assessment of content knowledge in conceptual science area to be taught

Target:

Implementation Plan (timeline): SE advisors and the SE coordinator monitor on a semester by semester basis

Responsible Individual(s):

Findings for Grades in Core Content Classes by Licensure area

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: PRAXIS II
Direct - Exam

Details/Description: Content knowledge
State licensure exam

Target:

Implementation Plan (timeline): Completion of program

Responsible Individual(s):

Findings for PRAXIS II

No Findings Added

Measure: Survey of research and investigation content knowledge
Indirect - Survey

Details/Description: Content knowledge- Research & Investigation
•SCED398 Survey for experience of scientific investigation

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Survey of research and investigation content knowledge

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

1(b) understand the unifying concepts of science

understand and can successfully convey to students the unifying concepts of science delineated by the National Science Education Standards

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2

placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Grades in Core Content Classes by Licensure area
Direct - Other

Details/Description: Assessment of content knowledge in conceptual science area to be taught

Target:

Implementation Plan (timeline): SE advisors and the SE coordinator monitor on a semester by semester basis

Responsible Individual(s):

Findings for Grades in Core Content Classes by Licensure area

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: PRAXIS II
Direct - Exam

Details/Description: Content knowledge
State licensure exam

Target:

Implementation Plan (timeline): Completion of program

Responsible Individual(s):

Findings for PRAXIS II

No Findings Added

Measure: Survey of research and investigation content knowledge
Indirect - Survey

Details/Description: Content knowledge- Research & Investigation
•SCED398 Survey for experience of scientific investigation

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Survey of research and investigation content knowledge

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

1(c) understand important personal and technological applications

understand and can successfully convey to students important personal and technological applications of science in their fields of licensure

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Grades in Core Content Classes by Licensure area
Direct - Other

Details/Description: Assessment of content knowledge in conceptual science area to be taught

Target:

Implementation Plan (timeline): SE advisors and the SE coordinator monitor on a semester by

semester basis

Responsible Individual(s):

Findings for Grades in Core Content Classes by Licensure area

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Survey of research and investigation content knowledge
Indirect - Survey

Details/Description: Content knowledge- Research & Investigation
•SCED398 Survey for experience of scientific investigation

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Survey of research and investigation content knowledge

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

1(d) understand research

understand research and can successfully design, conduct, report and evaluate investigations in science

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Survey of research and investigation content knowledge
Indirect - Survey

Details/Description: Content knowledge- Research & Investigation
•SCED398 Survey for experience of scientific investigation

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Survey of research and investigation content knowledge

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

1(e) understand mathematics to process and report data

Measure: Grades in Core Content Classes by Licensure area
Direct - Other

understand and can successfully use mathematics to process and report data, and solve problems, in their field(s) of licensure

Details/Description: Assessment of content knowledge in conceptual science area to be taught

Target:

Implementation Plan (timeline): SE advisors and the SE coordinator monitor on a semester by semester basis

Responsible Individual(s):

Findings for Grades in Core Content Classes by Licensure area

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: PRAXIS II
Direct - Exam

Details/Description: Content knowledge
State licensure exam

Target:

Implementation Plan (timeline): Completion of program

Responsible Individual(s):

Findings for PRAXIS II

No Findings Added

Measure: Survey of research and investigation content knowledge
Indirect - Survey

Details/Description: Content knowledge- Research & Investigation
•SCED398 Survey for experience of scientific investigation

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Survey of research and investigation content knowledge

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

2. Nature of Science

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:

2(a) understand historical and cultural development of science

understand the historical and cultural development of science and the evolution of knowledge in their discipline

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Lesson plans, project, and finding resources

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

2(b) understand the philosophical tenets, assumptions, goals, and values

understand the philosophical tenets, assumptions, goals, and values that distinguish science from technology and from other ways of knowing the world

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Lesson plans, project, and finding resources

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

2(c) engage students in studies of the nature of science

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

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Lesson plans, project, and finding resources

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan

CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

3. Inquiry

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:

3(a) understand the methods of injuiry

understand the processes, tenets, and assumptions of multiple methods of inquiry leading to scientific knowledge

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Lesson plans, project, and finding resources

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions

•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Survey of research and investigation content knowledge
Indirect - Survey

Details/Description: Content knowledge- Research & Investigation
•SCED398 Survey for experience of scientific investigation

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Survey of research and investigation content knowledge

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

3(b) engage students in inquires

engage students successfully in developmentally appropriate inquiries that require them to develop concepts and relationships from their observations, data, and inferences in a scientific manner

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Lesson plans, project, and finding resources

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Survey of research and investigation content knowledge
Indirect - Survey

Details/Description: Content knowledge- Research & Investigation
•SCED398 Survey for experience of scientific investigation

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Survey of research and investigation content knowledge

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

4. Issues

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:

4(a) understand socially important issues related to science

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

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Lesson plans, project, and finding resources

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

4(b) engage students in the analysis of problems

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

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Lesson plans, project, and finding resources

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

5. General Skills of Teaching

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:

5(a) vary teaching methods

vary their teaching actions, strategies, and methods to promote the development of multiple student skills and levels of understanding

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

5(b) promote the learning of science by diverse students

successfully promote the learning of science by students with different abilities, needs, interests, and backgrounds

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and

general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

5(c) organize and engage students in collaborative learning

successfully organize and engage students in collaborative learning using different student group learning strategies;

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

5(d) use technological tools

successfully use technological tools, including but not limited to computer technology, to access resources, collect and process data, and facilitate the learning of science

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

5(e) understand and build upon prior knowledge of students

Measure: Final evaluation of clinical practice
Direct - Other

understand and build effectively upon the prior beliefs, knowledge, experiences, and interests of students

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

5(f) maintain a safe and supportive environment

create and maintain a psychologically and socially safe and supportive learning environment

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2

placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

6. Curriculum

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:

6(a) understand curricular recommendations

understand the curricular recommendations of the National Science Education Standards, and can identify, access, and/or create resources and

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

activities for science education that are consistent with the standards

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Lesson plans, project, and finding resources

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

6(b) plan units of study

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

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Lesson plans, project, and finding resources

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

7. Science in the Community

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:

7(a) relate science to the community

identify ways to relate science to the community, involve stakeholders, and use community resources to promote the learning of science

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Lesson plans, project, and finding resources

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

7(b) involve students in activities that relate science to the community

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

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Lesson plans, project, and finding resources

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

8. Assessment

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:

8(a) use multiple assessment tools and strategies

use multiple assessment tools and strategies to achieve important goals for instruction that are aligned with methods of instruction and the needs of students;

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

8(b) use assessment results to guide instruction

use the results of multiple assessments to guide and modify instruction, the classroom environment, or the assessment process

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions

•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Effects on student learning
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

8(c) use assessment results to engage students in self-analysis

use the results of assessments as vehicles for students to analyze their own learning, engaging students in reflective self-analysis of their own work

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

9. Safety and Welfare

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:

9(a) understand the legal and ethical responsibilities

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

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Safety module
Direct - Student Artifact

Details/Description: Pedagogical and professional knowledge, skills and dispositions- Legal/Safety/Ethical Issues
•SCED398L safety module

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Safety module

No Findings Added

9(b) know and practice proper techniques for the use of materials

know and practice safe and proper techniques for the preparation, storage, dispensing, supervision, and disposal of all materials used in science instruction

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Safety module
Direct - Student Artifact

Details/Description: Pedagogical and professional knowledge, skills and dispositions- Legal/Safety/Ethical Issues
•SCED398L safety module

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Safety module

No Findings Added

9(c) know and follow safety procedures

know and follow emergency procedures, maintain safety equipment, and ensure safety procedures appropriate for the activities and the abilities of students

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Safety module
Direct - Student Artifact

Details/Description: Pedagogical and professional knowledge, skills and dispositions- Legal/Safety/Ethical Issues

•SCED398L safety module

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Safety module

No Findings Added

9(d) treat all living organisms in an ethical manner

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

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Safety module
Direct - Student Artifact

Details/Description: Pedagogical and professional knowledge, skills and dispositions- Legal/Safety/Ethical Issues
•SCED398L safety module

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Safety module

No Findings Added

10. Professional Growth

Teachers of science strive continuously to grow and change, personally and professionally, to meet the diverse needs of their students, school, community, and profession. They have a desire and disposition for growth and betterment. To show their disposition for growth, teachers of science must demonstrate that they:

10(a) engage in professional learning and leadership

engage actively and continuously in opportunities for professional learning and leadership that reach beyond minimum job requirements

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

10(b) reflect upon teaching

reflect constantly upon their teaching and identify ways and means through which they may grow professionally

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

10(c) improve teaching and facilitate professional growth

use information from students, supervisors, colleagues and others to improve their teaching and facilitate their professional growth

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

10(d) foster positive relationships

interact effectively with colleagues, parents, and students; mentor new colleagues; and foster positive relationships with the community

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Overall Recommendations

No text specified

Overall Reflection

No text specified

Action Plan

Status Report

2014-2015 Assessment Cycle

Assessment Plan

Outcomes and Measures

BA/BS in Science Education Outcome Set

1. Content

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:

1(a) understand major concepts, principles, theories, laws, and interrelationships

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

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Grades in Core Content Classes by Licensure area
Direct - Other

Details/Description: Assessment of content knowledge in conceptual science area to be taught

Target:

Implementation Plan (timeline): SE advisors and the SE coordinator monitor on a semester by semester basis

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: PRAXIS II
Direct - Exam

Details/Description: Content knowledge
State licensure exam

Target:

Implementation Plan (timeline): Completion of program

Responsible Individual(s):

Measure: Survey of research and investigation content knowledge
Indirect - Survey

Details/Description: Content knowledge- Research & Investigation
•SCED398 Survey for experience of scientific investigation

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

1(b) understand the unifying concepts of science

understand and can successfully convey to students the unifying concepts of science delineated by the National Science Education Standards

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Grades in Core Content Classes by Licensure area
Direct - Other

Details/Description: Assessment of content knowledge in conceptual science area to be taught

Target:

Implementation Plan (timeline): SE advisors and the SE coordinator monitor on a semester by semester basis

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan

•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: PRAXIS II
Direct - Exam

Details/Description: Content knowledge
State licensure exam

Target:

Implementation Plan (timeline): Completion of program

Responsible Individual(s):

Measure: Survey of research and investigation content knowledge
Indirect - Survey

Details/Description: Content knowledge- Research & Investigation
•SCED398 Survey for experience of scientific investigation

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

1(c) understand important personal and technological applications

understand and can successfully convey to students important personal and technological applications of science in their fields of licensure

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Grades in Core Content Classes by Licensure area
Direct - Other

Details/Description: Assessment of content knowledge in conceptual science area to be taught

Target:

Implementation Plan (timeline): SE advisors and the SE coordinator monitor on a semester by semester basis

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Survey of research and investigation content knowledge
Indirect - Survey

Details/Description: Content knowledge- Research & Investigation
•SCED398 Survey for experience of scientific investigation

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

1(d) understand research

understand research and can successfully design, conduct, report and evaluate investigations in science

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Survey of research and investigation content knowledge
Indirect - Survey

Details/Description: Content knowledge- Research & Investigation
•SCED398 Survey for experience of scientific investigation

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

1(e) understand mathematics to process and report data

understand and can successfully use mathematics to process and report data, and solve problems, in their field(s) of licensure

Measure: Grades in Core Content Classes by Licensure area
Direct - Other

Details/Description: Assessment of content knowledge in conceptual science area to be taught

Target:

Implementation Plan (timeline): SE advisors and the SE coordinator monitor on a semester by semester basis

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: PRAXIS II
Direct - Exam

Details/Description: Content knowledge
State licensure exam

Target:

Implementation Plan (timeline): Completion of program

Responsible Individual(s):

Measure: Survey of research and investigation content knowledge
Indirect - Survey

Details/Description: Content knowledge- Research & Investigation
•SCED398 Survey for experience of scientific investigation

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

2. Nature of Science

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:

2(a) understand historical and cultural development of science

understand the historical and cultural development of science and the evolution of knowledge in their discipline

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

2(b) understand the philosophical tenets, assumptions, goals, and values

understand the philosophical tenets, assumptions, goals, and values that distinguish science from technology and from other ways of knowing the world

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

2(c) engage students in studies of the nature of science

engage students

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

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

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

3. Inquiry

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:

3(a) understand the methods of injuiry

understand the processes, tenets, and assumptions of multiple methods of inquiry leading to scientific knowledge

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans

•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Survey of research and investigation content knowledge
Indirect - Survey

Details/Description: Content knowledge- Research & Investigation
•SCED398 Survey for experience of scientific investigation

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

3(b) engage students in inquires

engage students successfully in developmentally appropriate inquiries that require them to develop concepts and relationships from their observations, data, and inferences in a scientific manner

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Survey of research and investigation content knowledge
Indirect - Survey

Details/Description: Content knowledge- Research & Investigation
•SCED398 Survey for experience of scientific investigation

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

4. Issues

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:

4(a) understand socially important issues related to science

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

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

4(b) engage students in the analysis of problems

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

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions

•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

5. General Skills of Teaching

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:

5(a) vary teaching methods

vary their teaching actions, strategies, and methods to promote the development of multiple student skills and levels of understanding

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

5(b) promote the learning of science by diverse students

successfully promote the learning of science by students with different abilities, needs, interests, and backgrounds

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

5(c) organize and engage students in collaborative learning

successfully organize and engage students in collaborative learning using different student group learning strategies;

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

5(d) use technological tools

successfully use technological tools, including but not limited to computer technology, to access resources, collect and process data, and facilitate the learning of science

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

5(e) understand and build upon prior knowledge of students

understand and build effectively upon the prior beliefs, knowledge, experiences, and interests of students

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

5(f) maintain a safe and supportive environment

create and maintain a psychologically and socially safe and supportive learning environment

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions

•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

6. Curriculum

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:

6(a) understand curricular recommendations

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

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan

•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

6(b) plan units of study

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

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

7. Science in the Community

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:

7(a) relate science to the community

identify ways to relate science to the community,

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

involve stakeholders, and use community resources to promote the learning of science

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

7(b) involve students in activities that relate science to the community

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

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

8. Assessment

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:

8(a) use multiple assessment tools and strategies

use multiple assessment tools and strategies to achieve important goals for instruction that are aligned with methods of instruction and the needs of students;

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

8(b) use assessment results to guide instruction

use the results of multiple assessments to guide and modify instruction, the classroom environment, or the assessment process

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Effects on student learning
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

8(c) use assessment results to engage students in self-analysis

use the results of assessments as vehicles for students to analyze their own learning, engaging students in reflective self-analysis of their own work

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan

•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

9. Safety and Welfare

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:

9(a) understand the legal and ethical responsibilities

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

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Safety module
Direct - Student Artifact

Details/Description: Pedagogical and professional knowledge, skills and dispositions- Legal/Safety/Ethical Issues
•SCED398L safety module

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to

student teaching

Responsible Individual(s):

9(b) know and practice proper techniques for the use of materials

know and practice safe and proper techniques for the preparation, storage, dispensing, supervision, and disposal of all materials used in science instruction

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Safety module
Direct - Student Artifact

Details/Description: Pedagogical and professional knowledge, skills and dispositions- Legal/Safety/Ethical Issues
•SCED398L safety module

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

9(c) know and follow safety procedures

know and follow emergency procedures, maintain safety equipment, and ensure safety procedures appropriate for the activities and the abilities of students

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Safety module
Direct - Student Artifact

Details/Description: Pedagogical and professional knowledge, skills and dispositions- Legal/Safety/Ethical Issues
•SCED398L safety module

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

9(d) treat all living organisms in an ethical manner

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

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Measure: Safety module
Direct - Student Artifact

Details/Description: Pedagogical and professional knowledge, skills and dispositions- Legal/Safety/Ethical Issues
•SCED398L safety module

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to

student teaching

Responsible Individual(s):

10. Professional Growth

Teachers of science strive continuously to grow and change, personally and professionally, to meet the diverse needs of their students, school, community, and profession. They have a desire and disposition for growth and betterment. To show their disposition for growth, teachers of science must demonstrate that they:

10(a) engage in professional learning and leadership

engage actively and continuously in opportunities for professional learning and leadership that reach beyond minimum job requirements

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

10(b) reflect upon teaching

reflect constantly upon their teaching and identify ways and means through which they may grow professionally

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

10(c) improve teaching and facilitate professional growth

use information from students, supervisors, colleagues and others to improve their teaching and facilitate their professional growth

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

10(d) foster positive relationships

interact effectively with colleagues, parents, and students; mentor new colleagues; and foster positive relationships with the community

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Assessment Findings

Finding per Measure

BA/BS in Science Education Outcome Set

1. Content

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:

1(a) understand major concepts, principles, theories, laws, and interrelationships

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

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Grades in Core Content Classes by Licensure area
Direct - Other

Details/Description: Assessment of content knowledge in conceptual science area to be taught

Target:

Implementation Plan (timeline): SE advisors and the SE coordinator monitor on a semester by semester basis

Responsible Individual(s):

Findings for Grades in Core Content Classes by Licensure area

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: PRAXIS II
Direct - Exam

Details/Description: Content knowledge
State licensure exam

Target:

Implementation Plan (timeline): Completion of program

Responsible Individual(s):

Findings for PRAXIS II

No Findings Added

Measure: Survey of research and investigation content knowledge
Indirect - Survey

Details/Description: Content knowledge- Research & Investigation
•SCED398 Survey for experience of scientific investigation

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Survey of research and investigation content knowledge

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

1(b) understand the unifying concepts of science

understand and can successfully convey to students the unifying concepts of science delineated by the National Science Education Standards

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2

placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Grades in Core Content Classes by Licensure area
Direct - Other

Details/Description: Assessment of content knowledge in conceptual science area to be taught

Target:

Implementation Plan (timeline): SE advisors and the SE coordinator monitor on a semester by semester basis

Responsible Individual(s):

Findings for Grades in Core Content Classes by Licensure area

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: PRAXIS II
Direct - Exam

Details/Description: Content knowledge
State licensure exam

Target:

Implementation Plan (timeline): Completion of program

Responsible Individual(s):

Findings for PRAXIS II

No Findings Added

Measure: Survey of research and investigation content knowledge
Indirect - Survey

Details/Description: Content knowledge- Research & Investigation
•SCED398 Survey for experience of scientific investigation

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Survey of research and investigation content knowledge

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

1(c) understand important personal and technological applications

understand and can successfully convey to students important personal and technological applications of science in their fields of licensure

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Grades in Core Content Classes by Licensure area
Direct - Other

Details/Description: Assessment of content knowledge in conceptual science area to be taught

Target:

Implementation Plan (timeline): SE advisors and the SE coordinator monitor on a semester by

semester basis

Responsible Individual(s):

Findings for Grades in Core Content Classes by Licensure area

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Survey of research and investigation content knowledge
Indirect - Survey

Details/Description: Content knowledge- Research & Investigation
•SCED398 Survey for experience of scientific investigation

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Survey of research and investigation content knowledge

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

1(d) understand research

understand research and can successfully design, conduct, report and evaluate investigations in science

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Survey of research and investigation content knowledge
Indirect - Survey

Details/Description: Content knowledge- Research & Investigation
•SCED398 Survey for experience of scientific investigation

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Survey of research and investigation content knowledge

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

1(e) understand mathematics to process and report data

Measure: Grades in Core Content Classes by Licensure area
Direct - Other

understand and can successfully use mathematics to process and report data, and solve problems, in their field(s) of licensure

Details/Description: Assessment of content knowledge in conceptual science area to be taught

Target:

Implementation Plan (timeline): SE advisors and the SE coordinator monitor on a semester by semester basis

Responsible Individual(s):

Findings for Grades in Core Content Classes by Licensure area

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: PRAXIS II
Direct - Exam

Details/Description: Content knowledge
State licensure exam

Target:

Implementation Plan (timeline): Completion of program

Responsible Individual(s):

Findings for PRAXIS II

No Findings Added

Measure: Survey of research and investigation content knowledge
Indirect - Survey

Details/Description: Content knowledge- Research & Investigation
•SCED398 Survey for experience of scientific investigation

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Survey of research and investigation content knowledge

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

2. Nature of Science

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:

2(a) understand historical and cultural development of science

understand the historical and cultural development of science and the evolution of knowledge in their discipline

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Lesson plans, project, and finding resources

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

2(b) understand the philosophical tenets, assumptions, goals, and values

understand the philosophical tenets, assumptions, goals, and values that distinguish science from technology and from other ways of knowing the world

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Lesson plans, project, and finding resources

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

2(c) engage students in studies of the nature of science

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

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Lesson plans, project, and finding resources

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan

CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

3. Inquiry

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:

3(a) understand the methods of injuiry

understand the processes, tenets, and assumptions of multiple methods of inquiry leading to scientific knowledge

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Lesson plans, project, and finding resources

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions

•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Survey of research and investigation content knowledge
Indirect - Survey

Details/Description: Content knowledge- Research & Investigation
•SCED398 Survey for experience of scientific investigation

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Survey of research and investigation content knowledge

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

3(b) engage students in inquires

engage students successfully in developmentally appropriate inquiries that require them to develop concepts and relationships from their observations, data, and inferences in a scientific manner

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Lesson plans, project, and finding resources

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Survey of research and investigation content knowledge
Indirect - Survey

Details/Description: Content knowledge- Research & Investigation
•SCED398 Survey for experience of scientific investigation

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Survey of research and investigation content knowledge

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

4. Issues

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:

4(a) understand socially important issues related to science

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

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Lesson plans, project, and finding resources

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

4(b) engage students in the analysis of problems

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

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Lesson plans, project, and finding resources

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

5. General Skills of Teaching

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:

5(a) vary teaching methods

vary their teaching actions, strategies, and methods to promote the development of multiple student skills and levels of understanding

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

5(b) promote the learning of science by diverse students

successfully promote the learning of science by students with different abilities, needs, interests, and backgrounds

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and

general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

5(c) organize and engage students in collaborative learning

successfully organize and engage students in collaborative learning using different student group learning strategies;

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

5(d) use technological tools

successfully use technological tools, including but not limited to computer technology, to access resources, collect and process data, and facilitate the learning of science

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

5(e) understand and build upon prior knowledge of students

Measure: Final evaluation of clinical practice
Direct - Other

understand and build effectively upon the prior beliefs, knowledge, experiences, and interests of students

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

5(f) maintain a safe and supportive environment

create and maintain a psychologically and socially safe and supportive learning environment

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2

placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

6. Curriculum

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:

6(a) understand curricular recommendations

understand the curricular recommendations of the National Science Education Standards, and can identify, access, and/or create resources and

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

activities for science education that are consistent with the standards

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Lesson plans, project, and finding resources

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

6(b) plan units of study

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

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Lesson plans, project, and finding resources

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

7. Science in the Community

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:

7(a) relate science to the community

identify ways to relate science to the community, involve stakeholders, and use community resources to promote the learning of science

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Lesson plans, project, and finding resources

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

7(b) involve students in activities that relate science to the community

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

Measure: Lesson plans, project, and finding resources
Direct - Student Artifact

Details/Description: Content knowledge – contextual
•SCED398L nature of science lesson plans
•SCED 398L alternative energy project
•SCED 398L finding community resources for science teaching

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Lesson plans, project, and finding resources

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

8. Assessment

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:

8(a) use multiple assessment tools and strategies

use multiple assessment tools and strategies to achieve important goals for instruction that are aligned with methods of instruction and the needs of students;

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

8(b) use assessment results to guide instruction

use the results of multiple assessments to guide and modify instruction, the classroom environment, or the assessment process

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions

•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Effects on student learning
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

8(c) use assessment results to engage students in self-analysis

use the results of assessments as vehicles for students to analyze their own learning, engaging students in reflective self-analysis of their own work

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Unit Report
Direct - Student Artifact

Details/Description: Unit SCED398L unit plan
CIMT 400/400L unit Report
Project

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching

Responsible Individual(s):

Findings for Unit Report

No Findings Added

9. Safety and Welfare

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:

9(a) understand the legal and ethical responsibilities

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

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Safety module
Direct - Student Artifact

Details/Description: Pedagogical and professional knowledge, skills and dispositions- Legal/Safety/Ethical Issues
•SCED398L safety module

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Safety module

No Findings Added

9(b) know and practice proper techniques for the use of materials

know and practice safe and proper techniques for the preparation, storage, dispensing, supervision, and disposal of all materials used in science instruction

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Safety module
Direct - Student Artifact

Details/Description: Pedagogical and professional knowledge, skills and dispositions- Legal/Safety/Ethical Issues
•SCED398L safety module

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Safety module

No Findings Added

9(c) know and follow safety procedures

know and follow emergency procedures, maintain safety equipment, and ensure safety procedures appropriate for the activities and the abilities of students

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Safety module
Direct - Student Artifact

Details/Description: Pedagogical and professional knowledge, skills and dispositions- Legal/Safety/Ethical Issues

•SCED398L safety module

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Safety module

No Findings Added

9(d) treat all living organisms in an ethical manner

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

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Measure: Safety module
Direct - Student Artifact

Details/Description: Pedagogical and professional knowledge, skills and dispositions- Legal/Safety/Ethical Issues
•SCED398L safety module

Target:

Implementation Plan (timeline): During high school science methods course (SCED398L), senior year prior to
student teaching

Responsible Individual(s):

Findings for Safety module

No Findings Added

10. Professional Growth

Teachers of science strive continuously to grow and change, personally and professionally, to meet the diverse needs of their students, school, community, and profession. They have a desire and disposition for growth and betterment. To show their disposition for growth, teachers of science must demonstrate that they:

10(a) engage in professional learning and leadership

engage actively and continuously in opportunities for professional learning and leadership that reach beyond minimum job requirements

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

10(b) reflect upon teaching

reflect constantly upon their teaching and identify ways and means through which they may grow professionally

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

10(c) improve teaching and facilitate professional growth

use information from students, supervisors, colleagues and others to improve their teaching and facilitate their professional growth

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

10(d) foster positive relationships

interact effectively with colleagues, parents, and students; mentor new colleagues; and foster positive relationships with the community

Measure: Final evaluation of clinical practice
Direct - Other

Details/Description: Pedagogical and professional knowledge, skills and dispositions- clinical practice
Summative internship evaluation

Target:

Implementation Plan (timeline): End of student teaching placements-each students receives 2 placements in both a middle and high school setting

Responsible Individual(s):

Findings for Final evaluation of clinical practice

No Findings Added

Measure: Planning instruction
Direct - Portfolio

Details/Description: Pedagogical and professional knowledge, skills and dispositions
•SCED396L lesson plan
•SCED398L unit plan
•Teaching portfolio

Target:

Implementation Plan (timeline): During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.

Responsible Individual(s):

Findings for Planning instruction

No Findings Added

Overall Recommendations

No text specified

Overall Reflection

No text specified

Action Plan

Status Report

2015-2016 Assessment Cycle

- **Assessment Plan**
- **Assessment Findings**
- **Action Plan**
- **Status Report**

2016-2017 Assessment Cycle

Assessment Plan

Assessment Findings

2017-2018 Assessment Cycle

Assessment Plan

Assessment Findings

2018-2019 Assessment Cycle

Assessment Plan

Assessment Findings

2019-2020 Assessment Cycle

Assessment Plan

Assessment Findings

Appendix

A. **NCATE Report Science Education 2004** (Adobe Acrobat Document)
B. **Science Education Biology Assessment 2008-2009** (Microsoft Word)
C. **Science Education Chemistry Assessment 2008-2009** (Microsoft Word)
D. **Science Education Earth/Space Science Assessment 2008-2009** (Microsoft Word)
E. **Science Education - SPA Report - February 2012.pdf** (Adobe Acrobat Document)
F. **Science Education - SPA Report - March 2011** (Adobe Acrobat Document)

Program Report for the Preparation of Science Teachers National Science Teachers Association (NSTA) Option A

NATIONAL COUNCIL FOR ACCREDITATION OF TEACHER EDUCATION

COVER SHEET

1. Institution Name

Indiana State University

2. State

Indiana

3. Date submitted

MM DD YYYY

03 / 15 / 2011

4. Report Preparer's Information:

Name of Preparer:

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5. NCATE Coordinator's Information:

Name:

Susan Power

Phone: Ext.

(812)237 -2918

E-mail:

susan.power@indstate.edu

6. Name of institution's program

Science Education

7. NCATE Category

Science Education (multiple fields)

8. Grade levels[1] for which candidates are being prepared

6-12

(1) e.g. K-6, 7-9, 7-12, K-12

9. Program Type

- (•) First Teaching License
- ( ) Unspecified

10. Degree or award level

- (•) Baccalaureate
- ( ) Post Baccalaureate
- ( ) Master's

- ○ Post Master's
- ○ Specialist or C.A.S.
- ○ Doctorate
- ○ Endorsement only

11. Is this program offered at more than one site?

- ○ Yes
- ◉ No

12. If your answer is "yes" to above question, list the sites at which the program is offered

13. Title of the state license for which candidates are prepared, including science areas licensed to teach (i.e., Biology, Chemistry, Physics, Broad Field, etc.)

Biology, Chemistry, Physics, Earth Space Science

14. Program report status:

- ◉ Initial Review
- ○ Response to One of the Following Decisions: Further Development Required or Recognition with Probation
- ○ Response to National Recognition With Conditions

15. State Licensure requirement for national recognition:
NCATE requires 80% of the program completers who have taken the test to pass the applicable state licensure test for the content field, if the state has a testing requirement. Test information and data must be reported in Section III. Does your state require such a test?

- ◉ Yes
- ○ No

SECTION I - CONTEXT

1. Provide the following contextual information:

Description of any state or institutional policies that may influence the application of NSTA standards. (Response limited to 4,000 characters.)

The science education program is housed in the Center for Science Education, a recognized unit of the College of Arts & Sciences that serves as the locus of control for the program. The center serves as the student's chief administrative unit, and the Science Education (SCED) program coordinator oversees day-to-day operations. In addition to the coordinator, the SCED program is administered by center support staff, a science education advisors' committee including representatives from all contributing units, faculty who serve as undergraduate advisors from all IPSB (Indiana Professional Standards Board) content areas, and methods instructors. The science education program at Indiana State University (ISU) has been designed specifically for the current IPSB licensure areas (i.e., Physics, Chemistry, Biology, and Earth Space Science) and mapped to the IPSB standards for teachers of science. As such, the current SCED program has created a curricular structure that prepares candidates to meet the pre-service teacher standards enabling them to obtain a secondary license and successfully teach in the junior/middle and high school environments.

When candidates have followed the program successfully and passed the required examinations, they are deemed to be qualified for an Indiana certificate, as long as all non-educational requirements have also been met. Indiana State Education Student Services requires candidates who plan to complete an approved program to pass the PRAXIS exam, which consists of basic skills of reading, writing, and mathematics, and a PRAXIS II content area exam in each licensure area the candidate is pursuing. If the candidates have no criminal convictions or other factors in their backgrounds that would bar them from certification and if they have met all other requirements, certificates are issued when the students file an application and the required fee.

2. Description of the field and clinical experiences required for the program, including the number of hours for early field experiences and the number of hours/weeks for student teaching or internships. Describe setting of student teaching (i.e., student teaching occurs in a science classroom). (Response limited to 8,000 characters.)

Field Hours

The SCED program is comprised of three parts: the content methods, content licensure areas, and science core courses. In addition to the SCED program curriculum, all secondary education students complete the professional sequence housed in the Department of Curriculum, Instruction, and Media Technology (CIMT).

The SCED program includes two content methods courses: SCED396L and SCED398L. In each of these courses, methods, lesson plans, and inter-disciplinary approaches are explored in all licensure content areas.
SCED 396L (The Teaching of Science in the Junior High/Middle School: 2 hours) was designed to present those techniques of science

instruction and instructional materials most applicable to the teaching of science in junior high/middle school. SCED majors take this course in conjunction with CIMT (Curriculum, Instruction, and Media Technology) 301 and 302 before taking SCED398L. SCED398L (The Teaching of Science in High School: 2 hours) was designed to present those techniques of science instruction and instructional materials most applicable to the teaching of science in senior high school. SCED majors take this course in collaboration with CIMT (Curriculum, Instruction, and Media Technology) 400 and 400L before student teaching.

In 2003-2004, ISU implemented Project PRE (Partnering to Reform Education), an initiative designed to re-conceptualize the ISU teacher education program through the development of a fuller partnership between the College of Education and the College of Arts & Sciences. Additionally, Project PRE, committed to expanding and enriching existing Professional Development School relationships, includes the introduction of Professional Development School liaisons from both colleges.

SCED majors' early field experiences are planned and managed as a part of Project PRE. The students are placed in schools by CIMT faculty in 301, 302, 400, and 400L. Both CIMT faculty and SCED faculty are responsible for classroom supervision and assessment. When SCED majors take SCED396L along with CIMT301 and 302 (usually during their junior year), they are placed in middle schools and complete at least 10 hours of field experience. With their mentor teachers' and university supervisors' assistance, SCED majors observe science classes, prepare and teach more than five science lessons, participate in various school activities, and conduct educational projects such as middle school student interviews, development of inquiry based activities for classroom use, and cross curricular observation and evaluation. When SCED majors take SCED398L along with CIMT 400 and 400L, they are placed in high schools and complete at least 70 hours field experience. With their mentor teachers' and university supervisors' assistance, SCED majors observe science classes, prepare and teach at least one unit including more than five lessons, prepare a unit report, participate in various school activities, and conduct educational projects such as higher level cognitive assessment and implementation of student centered instruction.

Reflection and analysis assignments, which encourage SCED majors to make connection between educational theories presented in the courses and classroom practices, are required in each course. During the field experience provided in conjunction with SCED and CIMT courses, SCED students have an opportunity to focus on theories of learning, motivation, cognitive and moral development and intelligence in the context of science teaching. SCED majors are evaluated by the mentor teachers at the end of each field placement. This feedback is shared with the SCED students and faculty of the SCED and CIMT course.

Clinical Practice (Student teaching)

Clinical practice is the capstone experience for candidates in the secondary science certification program. SCED majors participate in a 16-week placement (8 weeks at the middle/junior high level and 8 weeks at the high school level). Clinical practice is conducted at both the middle/junior high and high school levels because our SCED majors are certified to teach at both levels. SCED majors are placed in classrooms with teaching responsibilities in their area of licensure. During each 8 week placement, the students observe for the first one or two weeks of their experience and then take over the teaching load of their mentor teachers. They receive regular feedback from their mentor teachers and from university supervisors who visit them at various times throughout their experience and must submit a weekly calendar or lessons plans to their mentor teachers for at least the first half of student teaching at each level.

Mentor teachers, student teacher supervisors, and CIMT faculty assess both content and pedagogy as part of the ongoing assessment process and on-site visits. Mentor teachers have been trained by the College of Education professionals and have the capacity to identify content-pedagogy deficiencies and to assess overall content preparation. These mentor teachers are the evaluators most consistently close to the student teachers and observe, ask questions, and critique the performance of each student teacher. Rather than hand over materials, the mentor teachers work with the student teachers to build up their own tool kit of resources while occasionally giving ideas from their own toolkits for student teachers to weave into their plans. Many mentor teachers help student teachers see the vast resource available in other current teachers and help SCED majors to learn to network with their co-workers. The experience in learning how to build relationships with other teachers is one of the biggest tools mentor teachers equip future teachers with.

3. A program of study that outlines the courses and experiences required for candidates to complete the program. The program of study must include course titles and numbers. (This information may be provided as an attachment from the college catalog or as a student advisement sheet.) Include forms showing requirements for science content courses for post degree or master's programs. Syllabi and course descriptions are not generally necessary. Please include directions for each level of candidate (e.g., undergraduate advising sheet and post degree or graduate advising sheet.) A course of study for post baccalaureate or master's programs should include required science content.

A program of study

See **Attachments** panel below.

4. This system will not permit you to include tables or graphics in text fields. Therefore any tables or charts must be attached as files here. The title of the file should clearly indicate the content of the file. Word documents, pdf files, and other commonly used file formats are acceptable. The system will not accept .docx files. Please include all information on an assessment (directions, scoring guide, data, and reflections on changes) in a single document. Note that if using MS Word, files must be in a version prior to MS Vista.

5. Candidate Information

Directions: Provide three years of data on candidates enrolled in the program and completing the program, beginning with the most recent academic year for which numbers have been tabulated. Report the data separately for the levels/tracks (e.g., baccalaureate,

post-baccalaureate, alternate routes, master's, doctorate) being addressed in this report. Report the data separately for each licensure area (e.g., chemistry, biology, broad field science, middle level). Data must also be reported separately for programs offered at multiple sites. Update academic years (column 1) as appropriate for your data span. Create additional tables as necessary.

Program: Biology: Baccalaureate		
Academic Year	**# of Candidates Enrolled in the Program**	**# of Program Completers[2]**
2009-2010	15	5
2008-2009	13	5
2007-2008	14	4

Program: Earth Space Science: Baccalaureate		
Academic Year	**# of Candidates Enrolled in the Program**	**# of Program Completers[2]**
2009-2010	6	1
2008-2009	6	3
2007-2008	9	1

Program: Chemistry: Baccalaureate		
Academic Year	**# of Candidates Enrolled in the Program**	**# of Program Completers[2]**
2009-2010	6	1
2008-2009	5	0
2007-2008	3	0

(2) NCATE uses the Title II definition for program completers. Program completers are persons who have met all the requirements of a state-approved teacher preparation program. Program completers include all those who are documented as having met such requirements. Documentation may take the form of a degree, institutional certificate, program credential, transcript, or other written proof of having met the program's requirements.

6. Faculty Information

Directions: Complete the following information for each faculty member responsible for science education professional coursework, clinical supervision, or administration in this program. This may be the science educator(s) or others directly involved in teaching science education portion of the licensure program.

Faculty Member Name	James Speer
Highest Degree, Field, & University[3]	Ph.D. in Geography
Assignment: Indicate the role of the faculty member[4]	Faculty, Program coordinator
Faculty Rank[5]	Associate professor
Tenure Track	☑ YES
Scholarship[6], Leadership in Professional Associations, and Service[7]:List up to 3 major contributions in the past 3 years[8]	* Scholarship, Leadership in Professional Associations Speer, J.H. 2010. Fundamentals of Tree-Ring Research. The University of Arizona Press. 324pp. Speer, J.H., Clay, K., Bishop, G., and Creech, M. 2010. The Effect of Periodical Cicadas on Growth of Five Tree Species in Midwestern Deciduous Forests. American Midland Naturalist 164: 173-186. Speer, J.H., Grissino-Mayer, G.H., Orvis, K., and Greenberg, K. 2009. Climate response of five oak species in the Eastern Deciduous Forest of the Southern Appalachian Mountains, U.S.A. Canadian Journal of Forest Research 39: 507-518. * Service SENCER Leadership Fellow, National Center for Science and Civic Engagement. 2010-present North American Dendroecological Fieldweek, Director, Ancient Bristlecone Pine Forest, August 5-13, 2011. Associate Editor for the Canadian Journal of Forest Research, 2010-Present.
Teaching or other professional experience in P-12 schools[9]	

Faculty Member Name	Eulsun Seung
Highest Degree, Field, & University[3]	Ph.D. Science Education
Assignment: Indicate the role of the faculty member[4]	Faculty
Faculty Rank[5]	Assistant professor
Tenure Track	☑ YES
	* Scholarship, Leadership in Professional Associations Seung, E., & Bryan, L. (2010). Physics TAs' knowledge development for teaching a novel physics curriculum grounded in a reflection orientation. Research in Science Education, 40, 675-698. Seung, E., Bryan, L., & Butler, M. (2009). Improving preservice middle school

Scholarship[6], Leadership in Professional Associations, and Service[7]:List up to 3 major contributions in the past 3 years[8]	science teachers' understanding of the nature of science. Journal of Science Teacher Education, 20, 155-177. Park, S., & Seung, E. (2008). Creativity in the Science Classroom, The Science Teacher, 75, 45-48. * Service : Academic association: Editorial Review Board, Journal of Science Teacher Education: 03/2009 – current : Community service: 2008-2010 : Prepared and managed a Science Night Event for the elementary students with the ISU elementary education students who enrolled in the SCED 393. : Member, Teacher Education Advisory Committee, Indiana State University: 2007- current
Teaching or other professional experience in P-12 schools[9]	8.P-12 teaching experience : Clinical supervision: K-12 2007-2010 : Science teacher: middle/high schools, 1988 - 2002

Faculty Member Name	Steve Moore
Highest Degree, Field, & University[3]	M.S. Secondary Education
Assignment: Indicate the role of the faculty member[4]	Faculty
Faculty Rank[5]	Adjunct Faculty
Tenure Track	☐ YES
Scholarship[6], Leadership in Professional Associations, and Service[7]:List up to 3 major contributions in the past 3 years[8]	* Scholarship, Leadership in Professional Associations, and Service : Off-campus Leadership Pastor, Bethany United Church of Christ, West Terre Haute, Indiana : Off-campus Service Member, Providence Link/West Terre Haute Ministerial Group: Ecumenical group that assists the needy in the local community.
Teaching or other professional experience in P-12 schools[9]	•Science teacher: middle school, Terre Haute, IN – two years •Chemistry and Physiology teacher at high school level, Terre Haute, IN – 32 years.

(3) e.g., PhD in Curriculum & Instruction, University of Nebraska.
(4) e.g., faculty, clinical supervisor, department chair, administrator
(5) e.g., professor, associate professor, assistant professor, adjunct professor, instructor
(6) Scholarship is defined by NCATE as systematic inquiry into the areas related to teaching, learning, and the education of teachers and other school personnel. Scholarship includes traditional research and publication as well as the rigorous and systematic study of pedagogy, and the application of current research findings in new settings. Scholarship further presupposes submission of one's work for professional review and evaluation.
(7) Service includes faculty contributions to college or university activities, schools, communities, and professional associations in ways that are consistent with the institution and unit's mission.
(8) e.g., officer of a state or national association, article published in a specific journal, and an evaluation of a local school program.
(9) Briefly describe the nature of recent experience in P-12 schools (e.g. clinical supervision, inservice training, teaching in a PDS) indicating the discipline and grade level of the assignment(s). List current P-12 licensure or certification(s) held, if any.

SECTION II - LIST OF ASSESSMENTS

1. In this section, list the 6-8 assessments that are being submitted as evidence for meeting the NSTA standards. All programs must provide a minimum of six assessments. If your state does not require a state licensure test in the content area, you must substitute an assessment that documents candidate attainment of content knowledge in #1 below. For each assessment, indicate the type or form of the assessment and when it is administered in the program.

Type and Number of Assessment	Name of Assessment (10)	Type or Form of Assessment (11)	When the Assessment Is Administered (12)
Assessment #1: Content Knowledge – Licensure Tests [13](required)	1.Content knowledge •Licensure test: PRAXIS II	State licensure exam	Completion of program
Assessment #2: Content Knowledge – an assessment of general content knowledge in discipline to be taught (required)	2.Assessment of content knowledge in conceptual science area to be taught •Grades in Core Content Classes by Licensure area	Course grades	SE advisors and the SE coordinator monitor on a semester by semester basis.
Assessment #3: Pedagogical and Professional Knowledge, Skills and Dispositions – Planning instruction and assessment (required)	3.Pedagogical and professional knowledge, skills and dispositions-planning instruction •SCED396L lesson plan •SCED398L unit plan •Teaching portfolio	Project/Portfolio	During science methods courses (SCED396L/398L), usually in the two semesters prior to student teaching.
	4.Pedagogical and professional knowledge, skills and dispositions-clinical practice •Final evaluation of clinical practice	Summative internship evaluation	End of student teaching placements-each students receives 2 placements in both a middle and high school setting.

Assessment #4: Pedagogical and Professional Knowledge, Skills and Dispositions – Student Teaching Assessment (required)			
Assessment #5: Effects on Student Learning (required)	5.Effects on Student learning •Unit report	Project	During high school science methods course (SCED398L), senior year prior to student teaching
Assessment #6: [Pedagogical and Professional Knowledge, Skills and Dispositions – Legal/Safety/Ethical Issues (required)	6.Pedagogical and professional knowledge, skills and dispositions-Legal/Safety/Ethical Issues •SCED398L safety module	Project	During high school science methods course (SCED398L), senior year prior to student teaching
Assessment#7: Content Knowledge – Research & Investigation (required)	7.Content knowledge-Research & Investigation •SCED398 Survey for experience of scientific investigation	Survey	During high school science methods course (SCED398L), senior year prior to student teaching
Assessment #8: Content Knowledge – Contextual Content (required)	8.Content knowledge – contextual •SCED398L nature of science lesson plans •SCED 398L alternative energy project •SCED 398L finding community resources for science teaching	Project	During high school science methods course (SCED398L), senior year prior to student teaching

(10) Identify assessment by title used in the program; refer to Section IV for further information on appropriate assessment to include.
(11) Identify the type of assessment (e.g., essay, case study, project, comprehensive exam, reflection, state licensure test, portfolio).
(12) Indicate the point in the program when the assessment is administered (e.g., admission to the program, admission to student teaching/internship, required courses [specify course title and numbers], or completion of the program).
(13) If licensure test data is submitted as Assessment #1, the assessment and scoring guide attachments are not required. If the state does not require a licensure test, another content based assessment must be submitted (including the assessment and scoring guide).

SECTION III - RELATIONSHIP OF ASSESSMENT TO STANDARDS

For each NSTA standard on the chart below, identify the assessment(s) in Section II that address the standard. One assessment may apply to multiple NSTA standards.

1. NSTA Standards[14]

Content. 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

	#1	#2	#3	#4	#5	#6	#7	#8
(a) 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) understand and can successfully convey to students the unifying concepts of science delineated by the National Science Education Standards;	☑	☑	☑	☑	☑	☐	☑	☐
(c) understand and can successfully convey to students important personal and technological applications of science in their fields of licensure;	☐	☑	☑	☐	☐	☐	☑	☐

(d) understand research and can successfully design, conduct, report and evaluate investigations in science	☐	☐	☑	☐	☐	☐	☑	☐
(e) and understand and can successfully use mathematics to process and report data, and solve problems, in their field(s) of licensure.	☑	☑	☑	☐	☐	☐	☑	☐

(14) Dimensions of standards are separated out from each other when it is highly likely they will be found in different assessment instruments. When the dimensions are likely to be apparent in the same assessment instrument, they have been left together.

2. Nature of Science. 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:

	#1	#2	#3	#4	#5	#6	#7	#8
(a) understand the historical and cultural development of science and the evolution of knowledge in their discipline;	☐	☐	☑	☐	☑	☐	☐	☑
(b) understand the philosophical tenets, assumptions, goals, and values that distinguish science from technology and from other ways of knowing the world;	☐	☐	☑	☐	☑	☐	☐	☑
(c) 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	☐	☐	☑	☐	☑	☐	☐	☑

3. Inquiry. 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:

	#1	#2	#3	#4	#5	#6	#7	#8
(a) understand the processes, tenets, and assumptions of multiple methods of inquiry leading to scientific knowledge;	☐	☐	☑	☑	☑	☐	☑	☐
(b) engage students successfully in developmentally appropriate inquiries that require them to develop concepts and relationships from their observations, data, and inferences in a scientific manner.	☐	☐	☑	☑	☑	☐	☑	☐

4. Issues. 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:

	#1	#2	#3	#4	#5	#6	#7	#8
(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;	☐	☐	☐	☐	☐	☐	☐	☑
(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.	☐	☐	☐	☐	☐	☐	☐	☑

5. General Skills of Teaching. 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

	#1	#2	#3	#4	#5	#6	#7	#8
(a) vary their teaching actions, strategies, and methods to promote the development of multiple student skills and levels of understanding;	☐	☐	☑	☑	☐	☐	☐	☐
(b) successfully promote the learning of science by students with different abilities, needs, interests, and backgrounds;	☐	☐	☑	☑	☐	☐	☐	☐
(c) successfully organize and engage students in collaborative learning using different student group learning strategies;	☐	☐	☑	☑	☐	☐	☐	☐
(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;	☐	☐	☑	☑	☐	☐	☐	☐
(e) understand and build effectively upon the prior beliefs, knowledge, experiences, and interests of students; and	☐	☐	☑	☑	☐	☐	☐	☐
(f) create and maintain a psychologically and socially safe and supportive learning environment.	☐	☐	☑	☑	☐	☐	☐	☐

6. Curriculum. 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:

	#1	#2	#3	#4	#5	#6	#7	#8
(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;								
(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.	☐	☐	☑	☐	☐	☐	☐	☐

7. Science in the Community. 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:

	#1	#2	#3	#4	#5	#6	#7	#8
(a) identify ways to relate science to the community, involve stakeholders, and use community resources to promote the learning of science;	☐	☐	☐	☐	☐	☐	☐	☑
(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.	☐	☐	☐	☐	☐	☐	☐	☑

8. Assessment. 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:

	#1	#2	#3	#4	#5	#6	#7	#8
(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;	☐	☐	☑	☑	☑	☐	☐	☐
(b) use the results of multiple assessments to guide and modify instruction, the classroom environment, or the assessment process;	☐	☐	☑	☑	☑	☐	☐	☐
(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.	☐	☐	☑	☑	☑	☐	☐	☐

9. Safety and Welfare. 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:

	#1	#2	#3	#4	#5	#6	#7	#8
(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;	☐	☐	☑	☐	☐	☑	☐	☐
(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.	☐	☐	☐	☐	☐	☑	☐	☐

NOTE: A program must meet Standard 9a, b and c in order to receive either National Recognition or National Recognition with Conditions. Evidence must be shown in assessment 4 and assessment 6. Further information is available at the following URL: www.nsta.org/preservice"

10. Professional Growth. Teachers of science strive continuously to grow and change, personally and professionally, to meet the diverse needs of their students, school, community, and profession. They have a desire and disposition for growth and betterment. To show their disposition for growth, teachers of science must demonstrate that they:

	#1	#2	#3	#4	#5	#6	#7	#8
(a) engage actively and continuously in opportunities for professional learning and leadership that reach beyond minimum job requirements;	☐	☐	☑	☑	☑	☐	☐	☐
(b) reflect constantly upon their teaching and identify ways and means through which they may grow professionally;	☐	☐	☑	☑	☑	☐	☐	☐
(c) use information from students, supervisors, colleagues and others to improve their teaching and facilitate their professional growth;	☐	☐	☑	☑	☐	☐	☐	☐
(d) interact effectively with colleagues, parents, and students; mentor new colleagues; and foster positive relationships with the community.	☐	☐	☑	☑	☐	☐	☐	☐

SECTION IV - EVIDENCE FOR MEETING STANDARDS

DIRECTIONS: The 8 key assessments listed in Section II must be documented and discussed in Section IV. Taken as a whole, the assessments must demonstrate candidate mastery of the SPA standards. The key assessments should be required of all candidates. Assessments and scoring guides and data charts should be aligned with the SPA standards. This means that the concepts in the SPA standards should be apparent in the assessments and in the scoring guides to the same depth, breadth, and specificity as in the SPA standards. Data tables should also be aligned with the SPA standards. The data should be presented, in

general, at the same level it is collected. For example, if a rubric collects data on 10 elements [each relating to specific SPA standard(s)], then the data chart should report the data on each of the elements rather that reporting a cumulative score.

In the description of each assessment below, the SPA has identified potential assessments that would be appropriate. Assessments have been organized into the following three areas to be aligned with the elements in NCATE's unit Standard 1:
• Content knowledge (Assessments 1, 2, 7 and 8)
• Pedagogical and professional knowledge, skills and dispositions (Assessments 3, 4, and 6)
• Focus on student learning (Assessment 5)

Note that in some disciplines, content knowledge may include or be inextricable from professional knowledge. If this is the case, assessments that combine content and professional knowledge may be considered "content knowledge" assessments for the purpose of this report.

For each assessment, the compiler should prepare one document that includes the following items:

(1) A two-page narrative that includes the following:
a. A brief description of the assessment and its use in the program (one sentence may be sufficient);
b. A description of how this assessment specifically aligns with the standards it is cited for in Section III. Cite SPA standards by number, title, and/or standard wording.
c. A brief analysis of the data findings;
d. An interpretation of how that data provides evidence for meeting standards, indicating the specific SPA standards by number, title, and/or standard wording;
and

(2) Assessment Documentation
e. The assessment tool itself or a rich description of the assessment (often the directions given to candidates);
f. The scoring guide for the assessment; and
g. Charts that provide candidate data derived from the assessment.

The responses for e, f, and g (above) should be limited to the equivalent of five text pages each, however in some cases assessment instruments or scoring guides may go beyond five pages.

Note: As much as possible, combine all of the files for one assessment into a single file. That is, create one file for Assessment 4 that includes the two-page narrative (items a – d above), the assessment itself (item e above), the scoring guide (item f above), and the data chart (item g above). Each attachment should be no larger than 2 mb. Do not include candidate work or syllabi. There is a limit of 20 attachments for the entire report so it is crucial that you combine files as much as possible.

Please name files as directed in the Guidelines for Preparing an NCATE Program Report found on the NCATE web site at the following URL: http://www.ncate.org/institutions/resourcesNewPgm.asp?ch=90

NOTE: A science education program must meet NSTA Standards 9 a, b, c, and d in order to receive either National REcognition or National Recognition with Conditions. Evidence must be shown in assessment 4 and assessment 6. Further information is available at the following URL: www.nsta.org/preservice

1. **CONTENT KNOWLEDGE:** Data from licensure tests of content knowledge in science education. If your state does not require licensure tests in the content area, data from another assessment must be presented to document candidate attainment of content knowledge. The NSTA standard that could be addressed by this assessment includes, but is not limited to, Standard 1a.

Provide assessment information as outlined in the directions for Section IV
1. The names of all licensure tests or professional examinations required by the state for content and pedagogical or professional knowledge. [15]
2. Description of the alignment between licensure test data and applicable NSTA standards. However, if the test is a science content Praxis II test, the alignment is not required (e.g., Praxis II 20235: Biology Content).
3. Aggregated pass rates for each year over the past 3 years, including the most recent academic year. Data must be presented on all completers, even if there were fewer than 10 test takers during a single year. Eighty percent of program completers [16] who have taken the **content** test must pass the applicable state licensure test if the state has such a test.
4. The mean and range of sub-scores for the most recent academic year.
5. A single attachment of assessment documentation, including :
(a) the assessment tool or description of the assignment;
(b) the scoring guide for the assessment; and
(c) candidate data derived from the assessment.
Data should be in aggregate form (not scores for each candidate) and disaggregated by licensure area (biology, chemistry, middle school, etc) and by program (undergraduate, post degree, masters of teaching).
(d) reflections on any rubric changes and why those changes occurred may be included here.
The narrative section for each assessment (1-5 above) is limited to two text pages. If the attachment exceeds the 2mg file size limit by NCATE, break the attachment into logical parts.

Assessment1_content knowledge_praxis2	Assessment1_Content_Analysis_Form

See **Attachments** panel below.

(15) For example, Praxis II Biology: Content Knowledge.
(16) NCATE uses the Title II definition for program completers. Program completers are persons who have met all the requirements of a state-approved teacher preparation program. Program completers include all those who are documented as having met such requirements. Documentation may take the form of a degree, institutional certificate, program credential, transcript, or other written proof of having met the program's requirements.

2. CONTENT KNOWLEDGE: An assessment that demonstrates candidate knowledge of the conceptual science to be taught and related fields. An assessment that demonstrates that candidates are well prepared in the breadth of knowledge needed to teach in their fields of licensure. The NSTA standard that could be addressed by this assessment includes, but is not limited to, Standard 1a.

Assessments could include content grade point averages and minimum grade requirements, portfolio requirements, or comprehensive examinations suitable for preparing teachers of a curriculum based on the content recommendations in the 2003 NSTA Standards 1a.

Provide assessment information as outlined in the directions for Section IV in a single attachment

NOTE: In addition to the above all programs must submit the appropriate NSTA Content Analysis Form. These are available at the following URL: http://www.ncate.org/public/programStandards.asp?ch=4#NSTA Download the appropriate form, fill it out, and attach it here.

Assessment2_content knowledge_course grades

See **Attachments** panel below.

3. PEDAGOGICAL AND PROFESSIONAL KNOWLEDGE, SKILLS, AND DISPOSITIONS: An assessment that demonstrates candidates can plan effective classroom-based instruction, and design assessments, consistent with goals of the National Science Education Standards. NSTA standards that could be addressed by this assessment include, but are not limited to, standards 1a, 1b, 1c, 2c, 3b, 4b, 6, 7b, and 8.
A minimum indicator might include performance in the design of at least one major demonstration teaching unit (not a single lesson plan) aligned with goals as reflected in breadth of NSTA standards 1a-c, 2c, 3b, 4b, 6, 7b, and 8 (with lesson plans and varied assessments).

Provide assessment information as outlined in the directions for Section IV in a single attachment

Assessment3_lesson planning_portfolio

See **Attachments** panel below.

4. PEDAGOGICAL AND PROFESSIONAL KNOWLEDGE, SKILLS, AND DISPOSITIONS: Assessment that demonstrates candidates' knowledge, skills, and dispositions are applied effectively in practice. NSTA standards that could be addressed by this assessment include, but are not limited to, standard 9. The assessment instrument used in student teaching and the internship should be submitted.

An indicator could include performances on a subset of items from a student teaching observation form with each area of safety addressed explicitly: 9a- Legal and ethical, 9b – Safety procedures, 9c – Chemical use and storage and 9d – Use and care of animals.

NOTE: Safety is the most important part of learning to be a science teacher. Therefore, this assessment must explicitly address all aspects of the standard for a program with enough substance to ensure to external reviewers that preservice teachers are prepared and are able to address in student teaching in all areas of safety in the teaching of science.

An indicator could include performance in an internship that is evaluated using an observation form filled out by the cooperating teacher and supervisor.

Provide assessment information as outlined in the directions for Section IV in a single attachment

Assessment4_clinical practice

See **Attachments** panel below.

5. EFFECTS ON STUDENT LEARNING: An assessment that demonstrates candidate effects on student learning of major

concepts, principles, theories, laws; the unifying concepts of science; the nature of science; the practice of inquiry (including student engagement in inquiry); analysis of issues related to science and technology and the impact of science on themselves and their community. NSTA standards that must be addressed by this assessment include, but are not limited to, standards 1a, 2c, 3b and 4b.

An indicator might include an assessment of candidate on work samples aligned that is specific to science and explicitly evaluates each of the standards above. Work samples may include pre and post test data with analysis and reflections.

Provide assessment information as outlined in the directions for Section IV in a single attachment

Assessment5_Effects on student learning

See **Attachments** panel below.

6. PEDAGOGICAL AND PROFESSIONAL KNOWLEDGE, SKILLS, AND DISPOSITIONS: An assessment that demonstrates candidates are prepared in legal issues, safety, and ethical treatment of living things. The NSTA standard addressed by this assessment includes, but is not limited to, standard 9.

Assessments might include performance in a safety module with minimum levels of performance in each of the areas: 9a, 9b, 9c and 9d. This assessment must address safety knowledge and understanding that a science teacher needs to know and be able to do.
NOTE: Safety is the most important part of learning to be a science teacher. Therefore, this assessment must clearly address all aspects of the standard for a program with enough substance to ensure to external reviewers that preservice teachers are prepared in all areas of safety in the teaching of science.

Provide assessment information as outlined in the directions for Section IV

Assessment6_safety module

See **Attachments** panel below.

7. CONTENT KNOWLEDGE: An assessment that demonstrates knowledge of research and investigation in science. Candidates understand multiple forms of scientific inquiry; can design, conduct, and report research in their field; and can use mathematics and appropriate technology to collect, process, and explain data. NSTA standards that could be addressed by this assessment include, but are not limited to, standards 1d-e.

Assessments might include performance in or on a science content thesis, science research project, occupational experience in scientific research, or some similar confirmed experiences in the design of research in science, with criteria aligned with requirements of this assessment. This includes the candidate designing the experiment, collecting the data, analyzing the data and reporting on the data.

Provide assessment information as outlined in the directions for Section IV

Assessment7_Knowledge of research and investigation

See **Attachments** panel below.

8. CONTENT KNOWLEDGE: An assessment that demonstrates knowledge of the contextual content of science. An assessment that demonstrates candidates have a strong understanding of the socially relevant issues, inquiry, history, philosophy and applications of science. NSTA standards addressed by this assessment include, but are not limited to 2a-b, 3a, and 4a

Assessments might include performance in a course specifically designed to cover these topics, or performance on a portfolio subset with requirements specifically demonstrating preparation in the knowledge identified in this assessment.

Provide assessment information as outlined in the directions for Section IV.

Assessment8_Knowledge of the contextual content of science

See **Attachments** panel below.

SECTION V - USE OF ASSESSMENT RESULTS TO IMPROVE PROGRAM

1. Evidence must be presented in this section that assessment results have been analyzed and have been or will be used to improve candidate performance and strengthen the program. This description should not link improvements to individual assessments but, rather, it should summarize principal findings from the evidence, the faculty's interpretation of those findings, and changes made in (or planned for) the program as a result. Describe the steps program faculty has taken to use information from assessments for improvement of both candidate performance and the program. **This information should be organized around (1) science content knowledge, (2) professional and**

pedagogical knowledge, skill, and dispositions, and (3) student learning.

(Response limited to 12,000 characters)

1) Science content knowledge

Our candidates' passing rate on the PRAXIS II exams is lower than the state's passing rate. Given ISU's long commitment to training teachers, we should expect to at least meet the state's passing rate. The low passing rate might be somewhat caused by our candidates' failure in their minor area PRAXIS II test. Current SCED curriculum, which was revised during the Fall 2007 semester, requires only a major (and no minor) of candidates and requires them to take more content courses. Thus, we expect an increase in the passing rate in the future. In addition, we are in the process of revising the SCED curriculum following Indiana's new set of teacher licensing rules, REPA (Rules for Educator Preparation and Accountability), which will go into effect August 2013. According to these rules, the course work making up a content "major" or "minor" for candidates in a program leading to initial licensure must meet or exceed the course work required for a major or minor in that subject offered at the institution to non-education majors. For example, science education majors who pursue chemistry teaching licensure should take the same content courses as chemistry majors who pursue a BS in Chemistry in the Department of Chemistry and Physics. This new curriculum requires a significant increase in science content courses, which will improve our candidates' science content knowledge. The SCED majors (except Earth Space Science majors) who will follow this new curriculum will be able to earn degrees in both science education and a content discipline (i.e. Chemistry, Biology, or Physics). Since ISU does not have an "Earth Space Science" major for non-education majors, we are developing a science education curriculum for "Earth Space Science" teacher licensure. Science education majors who pursue two degrees will also have two academic advisors—one from the science department and another from the SCED program. This will be helpful to our candidates as they study science content courses.

2) Professional and pedagogical knowledge, skill, and dispositions in the teaching of science

During the process of preparing for the NCATE assessment, we realized that our assessment tools did not fully include the NSTA standards. For example, NSTA S4 (Issues) and S7 (Science in the community) had not been assessed before Fall 2010. Even though we covered topics related to these standards, we did not have any assessment data. Thus, we recently adopted some assignments for SCED398L and assessed the assignments to collect data related to these two standards from Fall 2010. We will keep emphasizing these topics in our science methods courses and evaluate our candidates' outcomes. We will add the components that meet these two standards to the lesson plan and unit plan assessment as well. In addition, we will connect these two standards to our teaching portfolio assessment.

The teaching portfolio assessment has been an efficient tool to include many NSTA standards, since it includes candidates' outcomes from their SCED396L and 398L course work and field experiences. We collected teaching portfolio assessment data for the past two years. We will continue to elaborate the teaching portfolio format to increase the quality of our candidates' teaching portfolios.

We developed a new assessment tool for clinical practice and will use it from Spring 2011. The new assessment tool was developed to include more NSTA standards. Using the new tool will provide evidence that shows how our candidates' clinical practice experience meets NSTA standards.

We do not have direct evidence for knowledge of research and investigation (e.g., candidates' research report). Our candidates usually experience scientific investigation when they take their major science content courses. We did not collect our candidates' science investigation outcomes from the courses. Instead, we conducted a survey to investigate candidates' experiences conducting science research in their field. On the open-ended survey, our candidates were asked to describe the experiences they have had with scientific research aside from simple lab procedures conducted during class time (i.e., "doing" science, scientific investigation). These survey data may be counted as indirect evidence. Therefore, we need to collect data from the science courses to show direct evidence that our candidates have knowledge of research and investigation.

3) Student learning in science
We used unit report data to show our candidates' effects on student learning in science. The unit report is a tool used across the university. Thus, the rubric for assessing the unit report does not include specific components that are unique to science teaching. We need to develop a science teaching specific rubric to evaluate our candidates' effects on student learning during their field experiences and clinical practice.

4) SCED program
One of the reasons we do have only one or two years of data for some assessments is the unstable status of our faculty. Currently, we have a tenure track faculty and instructor. The coordinator for the SCED program has been an interim position for the past several years. In order to develop our SCED program, we will hire a new SCED director this year. If we have a director who has experience in science education administration, teaching, and research, our program will improve significantly.
Our SCED advisory committee, consisting of tenured faculty from each science department, meets regularly to discuss enrollments, identify potential curricular changes and identify the strengths and weaknesses of assessment in the core content-pedagogy courses. In addition to SCED curricular changes, the advisory group has an oversight role with respect to potential curricular changes in the content areas as proposed by individual departments. Finally, the SCED advisory committee annually reviews the Praxis I and Praxis II performance of SCED majors—as well as the student teaching experiences. We believe that this SCED advisory committee has contributed to SCED program development. We will maintain this committee and meet more often to discuss all concerns for the improvement of the SCED program.

In summary, the goal of the performance-based assessment regimen detailed in this summary and the structure of the current SCED curriculum at ISU is to consistently update and revise the program as necessary. Based on recent curriculum revisions and improved advising practices, the SCED program continues to produce high quality science teachers who meet state and national licensure requirements. Finally,

the overall success of the SCED program continues to be a by-product of inter-college collaborations between the Colleges of Arts & Sciences and Education.

SECTION VI - FOR REVISED REPORTS OR RESPONSE TO CONDITIONS REPORTS ONLY

1. For Revised Reports: Describe what changes or additions have been made to address the standards that were not met in the original submission. Provide new responses to questions and/or new documents to verify the changes described in this section. Specific instructions for preparing a Revised Report are available on the NCATE web site at http://www.ncate.org/Accreditation/ProgramReview/ProgramReportSubmission/RevisedProgramReports/tabid/453/Default.aspx

For Response to Conditions Reports: Describe what changes or additions have been made to address the conditions cited in the original recognition report. Provide new responses to questions and/or new documents to verify the changes described in this section. Specific instructions for preparing a Response to Conditions Report are available on the NCATE web site at http://www.ncate.org/Accreditation/ProgramReview/ProgramReportSubmission/ResponsetoConditionsReport/tabid/454/Default.aspx

(Response limited to 24,000 characters.)

Please click "Next"

This is the end of the report. Please click "Next" to proceed.

Program Report for the Preparation of Science Teachers National Science Teachers Association (NSTA) Option A

NATIONAL COUNCIL FOR ACCREDITATION OF TEACHER EDUCATION

COVER SHEET

1. Institution Name

Indiana State University

2. State

Indiana

3. Date submitted

MM DD YYYY

02 / 29 / 2012

4. Report Preparer's Information:

Name of Preparer:
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5. NCATE Coordinator's Information:

Name:
Denise Collins
Phone: Ext.
(812)237 -2918
E-mail:
denise.collins@indstate.edu

6. Name of institution's program

Science Education

7. NCATE Category

Science Education (multiple fields)

8. Grade levels[1] for which candidates are being prepared

6-12

(1) e.g. K-6, 7-9, 7-12, K-12

9. Program Type

- (●) First Teaching License
- ( ) Unspecified

10. Degree or award level

- (●) Baccalaureate
- ( ) Post Baccalaureate
- ( ) Master's
- ( ) Post Master's
- ( ) Specialist or C.A.S.
- ( ) Doctorate
- ( ) Endorsement only

11. Is this program offered at more than one site?

- ( ) Yes
- (●) No

12. If your answer is "yes" to above question, list the sites at which the program is offered

13. Title of the state license for which candidates are prepared, including science areas licensed to teach (i.e., Biology, Chemistry, Physics, Broad Field, etc.)

Biology, Chemistry, Physics, Earth/Space Sciences

14. Program report status:

- ( ) Initial Review
- (●) Response to One of the Following Decisions: Further Development Required or Recognition with Probation
- ( ) Response to National Recognition With Conditions

15. Is your unit seeking

- ( ) NCATE accreditation for the first time (initial accreditation)
- (●) Continuing NCATE accreditation

16. State Licensure requirement for national recognition:
NCATE requires 80% of the program completers who have taken the test to pass the applicable state licensure test for the content field, if the state has a testing requirement. Test information and data must be reported in Section III. Does your state require such a test?

- (●) Yes
- ( ) No

SECTION I - CONTEXT

1. Provide the following contextual information:

Description of any state or institutional policies that may influence the application of NSTA standards. (Response limited to 4,000 characters.)

The Science Education Program is housed in the Center for Science Education, a recognized unit of the College of Arts & Sciences that serves as the locus of control for the program. The Center serves as the students' chief administrative unit, and the Science Education (SCED) Program Director oversees day-to-day operations. In addition to the Director, the SCED program is administered by center support staff and a Science Education Advisory Committee including faculty representatives who serve as undergraduate advisors for all the IPSB (Indiana Professional Standards Board) content areas. There is also a representative from the College of Education. The Science Education Program at Indiana State University (ISU) has been designed specifically for the current IPSB licensure areas (i.e., Physics, Chemistry, Biology, and Earth/Space Science) and mapped to the IPSB standards for teachers of science. As such, the current SCED program has created a curricular structure that prepares candidates to meet the pre-service teacher standards enabling them to obtain a secondary license and successfully teach in the junior/middle and high school environments. Following REPA (Rules for Educator Preparation and Accountability) of Indiana State, current SCED curriculum requires our candidates to complete the existing science majors' coursework on campus. As of Fall, 2012, entering freshman must elect to take a double major in Science Education and either Biology, Chemistry or Physics or a major in Science Education with a concentration in Earth/Space Sciences.

When candidates have followed the program successfully and passed the required examinations, they are deemed to be qualified for an

Indiana certificate, as long as all non-educational requirements have also been met. Indiana State Education Student Services requires candidates who plan to complete an approved program to pass the PRAXIS exam, which consists of basic skills of reading, writing, and mathematics, and a PRAXIS II content area exam in each licensure area the candidate is pursuing. If the candidates have no criminal convictions or other factors in their backgrounds that would bar them from certification and if they have met all other requirements, certificates are issued when the students file an application and the required fee.

2. Description of the field and clinical experiences required for the program, including the number of hours for early field experiences and the number of hours/weeks for student teaching or internships. Describe setting of student teaching (i.e., student teaching occurs in a science classroom). (Response limited to 8,000 characters.)

Field Hours

The SCED program is comprised of three parts: the content methods, content licensure areas, and science core courses. In addition to the SCED program curriculum, all secondary education students complete the professional sequence housed in the Department of Curriculum, Instruction, and Media Technology (CIMT).

The SCED program includes two content methods courses: SCED396L and SCED398L. In each of these courses, methods, lesson plans, safety and inter-disciplinary approaches are explored in all licensure content areas. SCED 396L (The Teaching of Science in the Junior High/Middle School: 3 credits) was designed to present those techniques of science instruction and instructional materials most applicable to the teaching of science in junior high/middle school. SCED majors take this course in conjunction with CIMT (Curriculum, Instruction, and Media Technology) 301 and 302 before taking SCED398L. SCED398L (The Teaching of Science in High School: 3 credits) was designed to present those techniques of science instruction and instructional materials most applicable to the teaching of science in senior high school. SCED majors take this course in collaboration with CIMT 400 and 400L before student teaching.

In 2003-2004, ISU implemented Project PRE (Partnering to Reform Education), an initiative designed to re-conceptualize the ISU teacher education program through the development of a fuller partnership between the College of Education and the College of Arts & Sciences. Additionally, Project PRE, committed to expanding and enriching existing Professional Development School relationships, includes the introduction of Professional Development School liaisons from both colleges.

SCED majors' early field experiences are planned and managed as a part of Project PRE. The students are placed in schools by CIMT faculty in 301, 302, 400, and 400L. Both CIMT faculty and SCED faculty are responsible for classroom supervision and assessment. When SCED majors take SCED396L along with CIMT301 and 302 (usually during their junior year), they are placed in middle schools and complete at least 10 hours of field experience. With their mentor teachers' and university supervisors' assistance, SCED majors observe science classes,
prepare and teach more than five science lessons, participate in various school activities, and conduct educational projects such as middle school student interviews, development of inquiry based activities for classroom use, and cross curricular observation and evaluation. When SCED majors take SCED398L along with CIMT 400 and 400L, they are placed in high schools and complete at least 70 hours field experience. With their mentor teachers' and university supervisors' assistance, SCED majors observe science classes, prepare and teach at least one unit including more than five lessons, prepare a unit report, participate in various school activities, and conduct educational projects such as higher level cognitive assessment and implementation of student centered instruction.

Reflection and analysis assignments, which encourage SCED majors to make connections between educational theories presented in the courses and classroom practices, are required in each course. During the field experience provided in conjunction with SCED and CIMT courses, SCED students have an opportunity to focus on theories of learning, motivation, cognitive and moral development and intelligence in the context of science teaching. SCED majors are evaluated by the mentor teachers at the end of each field placement. This feedback is shared with the SCED students and faculty of the SCED and CIMT course.

Clinical Practice (Student teaching)

Clinical practice is the capstone experience for candidates in the secondary science certification program. SCED majors participate in a 16-week placement (8 weeks at the middle/junior high level and 8 weeks at the high school level). Clinical practice is conducted at both the middle/junior high and high school levels because our SCED majors are certified to teach at both levels. SCED majors are placed in classrooms with teaching responsibilities in their area of licensure. During each 8 week placement, the students observe for the first one or two weeks of their experience and then take over the teaching load of their mentor teachers. They receive regular feedback from their mentor teachers and from university supervisors who visit them at various times throughout their experience and must submit a weekly calendar or lessons plans to their mentor teachers for at least the first half of student teaching at each level.

Mentor teachers, student teacher supervisors, and CIMT faculty assess both content and pedagogy as part of the ongoing assessment process and on-site visits. Mentor teachers have been trained by the College of Education professionals and have the capacity to identify content-pedagogy deficiencies and to assess overall content preparation. These mentor teachers are the evaluators most consistently close to the student teachers and observe, ask questions, and critique the performance of each student teacher. Rather than hand over materials, the mentor teachers work with the student teachers to build up their own tool kit of resources while occasionally giving ideas from their own toolkits for student teachers to weave into their plans. Many mentor teachers help student teachers see the vast resource available in other current teachers and help SCED majors to learn to network with their co-workers. The experience in learning how to build relationships with other teachers is one of the biggest tools mentor teachers equip future teachers with.

3. A program of study that outlines the courses and experiences required for candidates to complete the program. The program of study must include course titles and numbers. (This information may be provided as an attachment from the college catalog or as a student advisement sheet.) Include forms showing requirements for science content courses for post degree or master's programs.

Syllabi and course descriptions are not generally necessary. Please include directions for each level of candidate (e.g., undergraduate advising sheet and post degree or graduate advising sheet.) A course of study for post baccalaureate or master's programs should include required science content.

Program of Study

See **Attachments** panel below.

4. This system will not permit you to include tables or graphics in text fields. Therefore any tables or charts must be attached as files here. The title of the file should clearly indicate the content of the file. Word documents, pdf files, and other commonly used file formats are acceptable. The system will not accept .docx files. Please include all information on an assessment (directions, scoring guide, data, and reflections on changes) in a single document. Note that if using MS Word, files must be in a version prior to MS Vista.

5. Candidate Information

Directions: Provide three years of data on candidates enrolled in the program and completing the program, beginning with the most recent academic year for which numbers have been tabulated. Report the data separately for the levels/tracks (e.g., baccalaureate, post-baccalaureate, alternate routes, master's, doctorate) being addressed in this report. Report the data separately for each licensure area (e.g., chemistry, biology, broad field science, middle level). Data must also be reported separately for programs offered at multiple sites. Update academic years (column 1) as appropriate for your data span. Create additional tables as necessary.

Program:
Biology Program

Academic Year	# of Candidates Enrolled in the Program	# of Program Completers[2]
2010-2011	10	5
2009-2010	15	5
2008-2009	13	5

Program:
Chemistry Program

Academic Year	# of Candidates Enrolled in the Program	# of Program Completers[2]
2010-2011	2	0
2009-2010	6	1
2008-2009	5	0

Program:
Earth/Space Sciences Program

Academic Year	# of Candidates Enrolled in the Program	# of Program Completers[2]
2010-2011	10	1
2009-2010	6	1
2008-2009	6	3

Program:
Physics Program

Academic Year	# of Candidates Enrolled in the Program	# of Program Completers[2]
2010-2011	7	0
2009-2010	1	0
2008-2009	1	0

(2) NCATE uses the Title II definition for program completers. Program completers are persons who have met all the requirements of a state-approved teacher preparation program. Program completers include all those who are documented as having met such requirements. Documentation may take the form of a degree, institutional certificate, program credential, transcript, or other written proof of having met the program's requirements.

6. Faculty Information

Directions: Complete the following information for each faculty member responsible for science education professional coursework, clinical supervision, or administration in this program. This may be the science educator(s) or others directly involved in teaching science education portion of the licensure program.

Faculty Member Name	Carolyn Wallace
Highest Degree, Field, & University[3]	Ed. D., Science Education, University of Michigan
Assignment: Indicate the role of the faculty member[4]	Director of the Program, Teaching
Faculty Rank[5]	Associate Professor
Tenure Track	☑ YES
Scholarship[6], Leadership in Professional Associations, and Service[7]:List up to 3 major contributions in the past 3 years[8]	Carolyn S. Wallace Scholarship, Leadership in Professional Associations and Service Recent Publications: Pruitt, S. L., Wallace, C. S. (in press). The effect of a state department of education teacher mentor initiative on science achievement. Journal of Science Teacher Education. Wallace, C. S. (in press, on-line first). Authoritarian science curriculum structures as barriers to teaching and learning: An interpretation of personal experience. Science Education. DOI 10.1002/sce.20470. Wallace, C. S. & Priestley, M. R. (2011). Teacher beliefs and the mediation of curriculum innovation in Scotland: A socio-cultural perspective on professional development and change. Journal of Curriculum Studies, 37 (2), 357-381. DOI: 10.1080/00220272.2011.563447. Sample of Leadership in Professional Associations: National Association for Research in Science Teaching, 1991- 2004, 2009-present. Member of the Board of Directors, Chair of the Publications Advisory Committee, 2011-20
Teaching or other professional experience in P-12 schools[9]	Teaching Experience in P-12 1991-2010 Clinical supervision of secondary science preservice teachers 2005-2006 Biology teacher, Camden County High School, Kingsland, GA 1985 1989 Science teacher, Maryvale High School, Phoenix Union High School District, Phoenix, AZ. Taught biology, chemistry, AP biology and general science.

Faculty Member Name	Eulsun Seung
Highest Degree, Field, & University[3]	Ph.D., Science Education
Assignment: Indicate the role of the faculty member[4]	Faculty, Teaching
Faculty Rank[5]	Assistant Professor
Tenure Track	☑ YES
Scholarship[6], Leadership in Professional Associations, and Service[7]:List up to 3 major contributions in the past 3 years[8]	Scholarship, Leadership in Professional Associations Nam, J., Seung, E., & Go, M. (2011, published online first). The effect of a collaborative mentoring program on beginning science teachers' inquiry-based teaching practice, International Journal of Science Education. DOI:10.1080/09500693.2011.584329 Seung, E., & Bryan, L. (2010). Physics TAs' knowledge development for teaching a novel physics curriculum grounded in a reflection orientation. Research in Science Education, 40, 675-698. Seung, E., Bryan, L., & Butler, M. (2009). Improving preservice middle school science teachers' understanding of the nature of science. Journal of Science Teacher Education, 20, 155-177. Park, S., & Seung, E. (2008). Creativity in the Science Classroom, The Science Teacher, 75, 45-48. Service • Academic association: Editorial Review Board, Journal of Science Teacher Education: 03/2009 – current • Community service: 2008-2011 : Prepared and managed a Science Ni
Teaching or other professional experience in P-12 schools[9]	P-12 teaching experience • Clinical supervision: K-12 2007-2010 • Secondary Teaching Certification (6-12): Science (Specialization in Chemistry), Seoul, Korea • Science teacher: middle/high schools, Seoul, South Korea: 1988 - 2002

Faculty Member Name	Steve Moore
Highest Degree, Field, & University[3]	M.S. Secondary science, Indiana State University
Assignment: Indicate the role of the faculty member[4]	instructor
Faculty Rank[5]	Adjunct faculty
Tenure Track	☐ YES
Scholarship[6], Leadership in Professional Associations, and Service[7]:List up to 3 major contributions in the past 3 years[8]	Scholarship, Leadership in Professional Associations, and Service Off-campus Leadership Pastor, Bethany United Church of Christ, West Terre Haute, Indiana Off-campus Service Member, Providence Link/West Terre Haute Ministerial Group: Ecumenical group that assists the needy in the local community.
Teaching or other professional experience in P-12 schools[9]	P-12 teaching experience • Science teacher: middle school, Terre Haute, IN – two years • Chemistry and Physiology teacher at high school level, Terre Haute, IN – 32 years. • As an adjunct faculty member for five years in the Center for Science Education at Indiana State University, Terre Haute, IN, interacted with parents, teachers, and principals at local elementary schools. During this period, also supervised students doing their teaching practicum as a requirement in a science methods course for elementary education majors.

(3) e.g., PhD in Curriculum & Instruction, University of Nebraska.

(4) e.g., faculty, clinical supervisor, department chair, administrator

(5) e.g., professor, associate professor, assistant professor, adjunct professor, instructor

(6) Scholarship is defined by NCATE as systematic inquiry into the areas related to teaching, learning, and the education of teachers and other school personnel. Scholarship includes traditional research and publication as well as the rigorous and systematic study of pedagogy, and the application of current research findings in new settings. Scholarship further presupposes submission of one's work for professional review and evaluation.

(7) Service includes faculty contributions to college or university activities, schools, communities, and professional associations in ways that are consistent with the institution and unit's mission.

(8) e.g., officer of a state or national association, article published in a specific journal, and an evaluation of a local school program.

(9) Briefly describe the nature of recent experience in P-12 schools (e.g. clinical supervision, inservice training, teaching in a PDS) indicating the discipline and grade level of the assignment(s). List current P-12 licensure or certification(s) held, if any.

SECTION II - LIST OF ASSESSMENTS

1. In this section, list the 6-8 assessments that are being submitted as evidence for meeting the NSTA standards. All programs must provide a minimum of six assessments. If your state does not require a state licensure test in the content area, you must substitute an assessment that documents candidate attainment of content knowledge in #1 below. For each assessment, indicate the type or form of the assessment and when it is administered in the program.

Type and Number of Assessment	Name of Assessment (10)	Type or Form of Assessment (11)	When the Assessment Is Administered (12)
Assessment #1: Content Knowledge – Licensure Tests [13](required)	Licensure test: PRAXIS II	State licensure exam	Completion of program
Assessment #2: Content Knowledge – an assessment of general content knowledge in discipline to be taught (required)	Grades in Core Content Classes by Licensure area Content analysis form	Course grades	SE advisors and the SE director monitor on a semester by semester basis.
Assessment #3: Pedagogical and Professional Knowledge, Skills and Dispositions – Planning instruction and assessment (required)	SCED396L lesson plan SCED398L unit plan Teaching portfolio	Project	During science methods courses (SCED396L/398L). Usually in the semesters prior to student teaching.
Assessment #4: Pedagogical and Professional Knowledge, Skills and Dispositions – Student Teaching Assessment (required)	Final evaluation of clinical practice	Summative internship evaluation	End of student teaching placements-each students receives 2 placements in both a middle and high school setting.
Assessment #5: Effects on Student Learning (required)	Unit SCED398L unit plan CIMT 400/400L unit Report	Project	During high school science methods course (SCED398L) and general teaching methods course (CIMT400/400L), senior year prior to student teaching
Assessment #6: [Pedagogical and Professional Knowledge, Skills and Dispositions – Legal/Safety/Ethical Issues (required)	SCED398L safety module Final evaluation of clinical practice	Project	During high school science methods course (SCED398L), senior year prior to student teaching, and end of student teaching.
Assessment#7: Content Knowledge – Research & Investigation (required)	Survey for experience of scientific investigation Student reports of scientific investigation	Survey Report	During science methods course (SCED396L or SCED398L)
Assessment #8: Content Knowledge – Contextual Content (required)	SCED398L nature of science lesson plans SCED 398L alternative energy project SCED 398L finding community resources for science teaching	Project	During high school science methods course (SCED398L), senior year prior to student teaching

(10) Identify assessment by title used in the program; refer to Section IV for further information on appropriate assessment to include.

(11) Identify the type of assessment (e.g., essay, case study, project, comprehensive exam, reflection, state licensure test, portfolio).

(12) Indicate the point in the program when the assessment is administered (e.g., admission to the program, admission to student teaching/internship, required courses [specify course title and numbers], or completion of the program).

(13) If licensure test data is submitted as Assessment #1, the assessment and scoring guide attachments are not required. If the state does not require a licensure test,

another content based assessment must be submitted (including the assessment and scoring guide).

SECTION III - RELATIONSHIP OF ASSESSMENT TO STANDARDS

For each NSTA standard on the chart below, identify the assessment(s) in Section II that address the standard. One assessment may apply to multiple NSTA standards.

1. NSTA Standards[14]

Content. 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

	#1	#2	#3	#4	#5	#6	#7	#8
(a) 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) understand and can successfully convey to students the unifying concepts of science delineated by the National Science Education Standards;	☑	☑	☑	☑	☑	☐	☑	☐
(c) understand and can successfully convey to students important personal and technological applications of science in their fields of licensure;	☐	☑	☑	☑	☑	☐	☑	☐
(d) understand research and can successfully design, conduct, report and evaluate investigations in science	☐	☐	☑	☐	☑	☐	☑	☐
(e) and understand and can successfully use mathematics to process and report data, and solve problems, in their field(s) of licensure.	☑	☑	☑	☐	☑	☐	☑	☐

(14) Dimensions of standards are separated out from each other when it is highly likely they will be found in different assessment instruments. When the dimensions are likely to be apparent in the same assessment instrument, they have been left together.

2. Nature of Science. 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:

	#1	#2	#3	#4	#5	#6	#7	#8
(a) understand the historical and cultural development of science and the evolution of knowledge in their discipline;	☐	☐	☑	☐	☑	☐	☐	☑
(b) understand the philosophical tenets, assumptions, goals, and values that distinguish science from technology and from other ways of knowing the world;	☐	☐	☑	☐	☑	☐	☐	☑
(c) 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	☐	☐	☑	☐	☑	☐	☐	☑

3. Inquiry. 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:

	#1	#2	#3	#4	#5	#6	#7	#8
(a) understand the processes, tenets, and assumptions of multiple methods of inquiry leading to scientific knowledge;	☐	☐	☑	☑	☑	☐	☑	☑
(b) engage students successfully in developmentally appropriate inquiries that require them to develop concepts and relationships from their observations, data, and inferences in a scientific manner.	☐	☐	☑	☑	☑	☐	☑	☑

4. Issues. 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:

	#1	#2	#3	#4	#5	#6	#7	#8
(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;	☐	☐	☑	☐	☑	☐	☐	☑
(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.	☐	☐	☑	☐	☑	☐	☐	☑

5. General Skills of Teaching. 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

	#1	#2	#3	#4	#5	#6	#7	#8
(a) vary their teaching actions, strategies, and methods to promote the development of multiple student skills and levels of understanding;	☐	☐	☑	☑	☑	☐	☐	☐
(b) successfully promote the learning of science by students with different abilities, needs, interests, and backgrounds;	☐	☐	☑	☑	☑	☐	☐	☐
(c) successfully organize and engage students in collaborative learning using different student group learning strategies;	☐	☐	☑	☑	☑	☐	☐	☐
(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;	☐	☐	☑	☑	☑	☐	☐	☐
(e) understand and build effectively upon the prior beliefs, knowledge, experiences, and interests of students; and	☐	☐	☑	☑	☑	☐	☐	☐
(f) create and maintain a psychologically and socially safe and supportive learning environment.	☐	☐	☑	☑	☑	☐	☐	☐

6. Curriculum. 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:

	#1	#2	#3	#4	#5	#6	#7	#8
(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;	☐	☐	☑	☑	☐	☐	☐	☑
(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.	☐	☐	☑	☑	☐	☐	☐	☑

7. Science in the Community. 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:

	#1	#2	#3	#4	#5	#6	#7	#8
(a) identify ways to relate science to the community, involve stakeholders, and use community resources to promote the learning of science;	☐	☐	☑	☐	☑	☐	☐	☑
(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.	☐	☐	☑	☐	☑	☐	☐	☑

8. Assessment. 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:

	#1	#2	#3	#4	#5	#6	#7	#8
(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;	☐	☐	☑	☑	☑	☐	☐	☐
(b) use the results of multiple assessments to guide and modify instruction, the classroom environment, or the assessment process;	☐	☐	☑	☑	☑	☐	☐	☐
(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.	☐	☐	☑	☑	☑	☐	☐	☐

9. Safety and Welfare. 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:

	#1	#2	#3	#4	#5	#6	#7	#8
(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;	☐	☐	☑	☑	☐	☑	☐	☐
(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.	☐	☐	☑	☑	☐	☑	☐	☐

NOTE: A program must meet Standard 9a, b and c in order to receive either National Recognition or National Recognition with Conditions. Evidence must be

shown in assessment 4 and assessment 6. Further information is available at the following URL: www.nsta.org/preservice"

10. Professional Growth. Teachers of science strive continuously to grow and change, personally and professionally, to meet the diverse needs of their students, school, community, and profession. They have a desire and disposition for growth and betterment. To show their disposition for growth, teachers of science must demonstrate that they:

	#1	#2	#3	#4	#5	#6	#7	#8
(a) engage actively and continuously in opportunities for professional learning and leadership that reach beyond minimum job requirements;	☐	☐	☑	☑	☐	☐	☐	☐
(b) reflect constantly upon their teaching and identify ways and means through which they may grow professionally;	☐	☐	☑	☑	☐	☐	☐	☐
(c) use information from students, supervisors, colleagues and others to improve their teaching and facilitate their professional growth;	☐	☐	☑	☑	☐	☐	☐	☐
(d) interact effectively with colleagues, parents, and students; mentor new colleagues; and foster positive relationships with the community.	☐	☐	☑	☑	☐	☐	☐	☐

SECTION IV - EVIDENCE FOR MEETING STANDARDS

DIRECTIONS: The 8 key assessments listed in Section II must be documented and discussed in Section IV. Taken as a whole, the assessments must demonstrate candidate mastery of the SPA standards. The key assessments should be required of all candidates. Assessments and scoring guides and data charts should be aligned with the SPA standards. This means that the concepts in the SPA standards should be apparent in the assessments and in the scoring guides to the same depth, breadth, and specificity as in the SPA standards. Data tables should also be aligned with the SPA standards. The data should be presented, in general, at the same level it is collected. For example, if a rubric collects data on 10 elements [each relating to specific SPA standard(s)], then the data chart should report the data on each of the elements rather that reporting a cumulative score.

In the description of each assessment below, the SPA has identified potential assessments that would be appropriate. Assessments have been organized into the following three areas to be aligned with the elements in NCATE's unit Standard 1:
• Content knowledge (Assessments 1, 2, 7 and 8)
• Pedagogical and professional knowledge, skills and dispositions (Assessments 3, 4, and 6)
• Focus on student learning (Assessment 5)

Note that in some disciplines, content knowledge may include or be inextricable from professional knowledge. If this is the case, assessments that combine content and professional knowledge may be considered "content knowledge" assessments for the purpose of this report.

For each assessment, the compiler should prepare one document that includes the following items:

(1) A two-page narrative that includes the following:
a. A brief description of the assessment and its use in the program (one sentence may be sufficient);
b. A description of how this assessment specifically aligns with the standards it is cited for in Section III. Cite SPA standards by number, title, and/or standard wording.
c. A brief analysis of the data findings;
d. An interpretation of how that data provides evidence for meeting standards, indicating the specific SPA standards by number, title, and/or standard wording;
and

(2) Assessment Documentation
e. The assessment tool itself or a rich description of the assessment (often the directions given to candidates);
f. The scoring guide for the assessment; and
g. Charts that provide candidate data derived from the assessment.

The responses for e, f, and g (above) should be limited to the equivalent of five text pages each, however in some cases assessment instruments or scoring guides may go beyond five pages.

Note: As much as possible, combine all of the files for one assessment into a single file. That is, create one file for Assessment 4 that includes the two-page narrative (items a – d above), the assessment itself (item e above), the scoring guide (item f above), and the data chart (item g above). Each attachment should be no larger than 2 mb. Do not include candidate work or syllabi. There is a limit of 20 attachments for the entire report so it is crucial that you combine files as much as possible.

Please name files as directed in the Guidelines for Preparing an NCATE Program Report found on the NCATE web site at the following URL: http://www.ncate.org/institutions/resourcesNewPgm.asp?ch=90

NOTE: A science education program must meet NSTA Standards 9 a, b, c, and d in order to receive either National REcognition or National Recognition with Conditions. Evidence must be shown in assessment 4 and assessment 6. Further information is available at the following URL: www.nsta.org/preservice

1. CONTENT KNOWLEDGE: Data from licensure tests of content knowledge in science education. If your state does not require licensure tests in the content area, data from another assessment must be presented to document candidate attainment of content knowledge. The NSTA standard that could be addressed by this assessment includes, but is not limited to, Standard 1a.

Provide assessment information as outlined in the directions for Section IV

1. The names of all licensure tests or professional examinations required by the state for content and pedagogical or professional knowledge. [15]
2. Description of the alignment between licensure test data and applicable NSTA standards. However, if the test is a science content Praxis II test, the alignment is not required (e.g., Praxis II 20235: Biology Content).
3. Aggregated pass rates for each year over the past 3 years, including the most recent academic year. Data must be presented on all completers, even if there were fewer than 10 test takers during a single year. Eighty percent of program completers [16] who have taken the **content** test must pass the applicable state licensure test if the state has such a test.
4. The mean and range of sub-scores for the most recent academic year.
5. A single attachment of assessment documentation, including :

(a) the assessment tool or description of the assignment;
(b) the scoring guide for the assessment; and
(c) candidate data derived from the assessment.

Data should be in aggregate form (not scores for each candidate) and disaggregated by licensure area (biology, chemistry, middle school, etc) and by program (undergraduate, post degree, masters of teaching).

(d) reflections on any rubric changes and why those changes occurred may be included here.

The narrative section for each assessment (1-5 above) is limited to two text pages. If the attachment exceeds the 2mg file size limit by NCATE, break the attachment into logical parts.

Assessment1: PRAXIS II results by science education area

See **Attachments** panel below.

(15) For example, Praxis II Biology: Content Knowledge.

(16) NCATE uses the Title II definition for program completers. Program completers are persons who have met all the requirements of a state-approved teacher preparation program. Program completers include all those who are documented as having met such requirements. Documentation may take the form of a degree, institutional certificate, program credential, transcript, or other written proof of having met the program's requirements.

2. CONTENT KNOWLEDGE: An assessment that demonstrates candidate knowledge of the conceptual science to be taught and related fields. An assessment that demonstrates that candidates are well prepared in the breadth of knowledge needed to teach in their fields of licensure. The NSTA standard that could be addressed by this assessment includes, but is not limited to, Standard 1a.

Assessments could include content grade point averages and minimum grade requirements, portfolio requirements, or comprehensive examinations suitable for preparing teachers of a curriculum based on the content recommendations in the 2003 NSTA Standards 1a.

Provide assessment information as outlined in the directions for Section IV in a single attachment

NOTE: In addition to the above all programs must submit the appropriate NSTA Content Analysis Form. These are available at the following URL: http://www.ncate.org/public/programStandards.asp?ch=4#NSTA Download the appropriate form, fill it out, and attach it here.

Assessment2: Grades in core content courses by licensure area	Content analysis for secondary science

See **Attachments** panel below.

3. PEDAGOGICAL AND PROFESSIONAL KNOWLEDGE, SKILLS, AND DISPOSITIONS: An assessment that demonstrates candidates can plan effective classroom-based instruction, and design assessments, consistent with goals of the National Science Education Standards. NSTA standards that could be addressed by this assessment include, but are not limited to, standards 1a, 1b, 1c, 2c, 3b, 4b, 6, 7b, and 8.

A minimum indicator might include performance in the design of at least one major demonstration teaching unit (not a single lesson plan) aligned with goals as reflected in breadth of NSTA standards 1a-c, 2c, 3b, 4b, 6, 7b, and 8 (with lesson plans and varied assessments).

Provide assessment information as outlined in the directions for Section IV in a single attachment

Assessment3:lesson plan_unit plan_portfolio

See **Attachments** panel below.

4. PEDAGOGICAL AND PROFESSIONAL KNOWLEDGE, SKILLS, AND DISPOSITIONS: Assessment that demonstrates candidates' knowledge, skills, and dispositions are applied effectively in practice. NSTA standards that could be addressed by this assessment include, but are not limited to, standard 9. The assessment instrument used in student teaching and the internship should be submitted.

An indicator could include performances on a subset of items from a student teaching observation form with each area of safety addressed explicitly: 9a- Legal and ethical, 9b – Safety procedures, 9c – Chemical use and storage and 9d – Use and care of animals.

NOTE: Safety is the most important part of learning to be a science teacher. Therefore, this assessment must explicitly address all aspects of the standard for a program with enough substance to ensure to external reviewers that preservice teachers are prepared and are able to address in student teaching in all areas of safety in the teaching of science.

An indicator could include performance in an internship that is evaluated using an observation form filled out by the cooperating teacher and supervisor.

Provide assessment information as outlined in the directions for Section IV in a single attachment

Assessment4: Clinical practice

See **Attachments** panel below.

5. EFFECTS ON STUDENT LEARNING: An assessment that demonstrates candidate effects on student learning of major concepts, principles, theories, laws; the unifying concepts of science; the nature of science; the practice of inquiry (including student engagement in inquiry); analysis of issues related to science and technology and the impact of science on themselves and their community. NSTA standards that must be addressed by this assessment include, but are not limited to, standards 1a, 2c, 3b and 4b.

An indicator might include an assessment of candidate on work samples aligned that is specific to science and explicitly evaluates each of the standards above. Work samples may include pre and post test data with analysis and reflections.

Provide assessment information as outlined in the directions for Section IV in a single attachment

Assessment5: Effects on student learning

See **Attachments** panel below.

6. PEDAGOGICAL AND PROFESSIONAL KNOWLEDGE, SKILLS, AND DISPOSITIONS: An assessment that demonstrates candidates are prepared in legal issues, safety, and ethical treatment of living things. The NSTA standard addressed by this assessment includes, but is not limited to, standard 9.

Assessments might include performance in a safety module with minimum levels of performance in each of the areas: 9a, 9b, 9c and 9d. This assessment must address safety knowledge and understanding that a science teacher needs to know and be able to do.
NOTE: Safety is the most important part of learning to be a science teacher. Therefore, this assessment must clearly address all aspects of the standard for a program with enough substance to ensure to external reviewers that preservice teachers are prepared in all areas of safety in the teaching of science.

Provide assessment information as outlined in the directions for Section IV

Assessment 6: Knowledge of safety

See **Attachments** panel below.

7. CONTENT KNOWLEDGE: An assessment that demonstrates knowledge of research and investigation in science. Candidates understand multiple forms of scientific inquiry; can design, conduct, and report research in their field; and can use mathematics and appropriate technology to collect, process, and explain data. NSTA standards that could be addressed by this assessment include, but are not limited to, standards 1d-e.

Assessments might include performance in or on a science content thesis, science research project, occupational experience in scientific research, or some similar confirmed experiences in the design of research in science, with criteria aligned with requirements of this assessment. This includes the candidate designing the experiment, collecting the data, analyzing the data and reporting on the data.

Provide assessment information as outlined in the directions for Section IV

Assessment 7: knowledge of research and investigation

See **Attachments** panel below.

8. CONTENT KNOWLEDGE: An assessment that demonstrates knowledge of the contextual content of science. An assessment that demonstrates candidates have a strong understanding of the socially relevant issues, inquiry, history, philosophy and applications of science. NSTA standards addressed by this assessment include, but are not limited to 2a-b, 3a, and 4a

Assessments might include performance in a course specifically designed to cover these topics, or performance on a portfolio subset with requirements specifically demonstrating preparation in the knowledge identified in this assessment.

Provide assessment information as outlined in the directions for Section IV.

Assessment 8: Knowledge of the contextual content of science

See **Attachments** panel below.

SECTION V - USE OF ASSESSMENT RESULTS TO IMPROVE PROGRAM

1. Evidence must be presented in this section that assessment results have been analyzed and have been or will be used to improve candidate performance and strengthen the program. This description should not link improvements to individual assessments but, rather, it should summarize principal findings from the evidence, the faculty's interpretation of those findings, and changes made in (or planned for) the program as a result. Describe the steps program faculty has taken to use information from assessments for improvement of both candidate performance and the program. **This information should be organized around (1) science content knowledge, (2) professional and pedagogical knowledge, skill, and dispositions, and (3) student learning.**

(Response limited to 12,000 characters)

SECTION V—USE OF ASSESSMENT RESULTS TO IMPROVE
CANDIDATE AND PROGRAM PERFORMANCE

Science content knowledge

Our candidates' passing rate on the PRAXIS II exams is lower than the state's passing rate. Given ISU's long commitment to training teachers, we feel this is unacceptable and will work to raise our PRAXIS II test scores. As we mentioned in the section, our students previously also took the PRAXIS II test in their minor science concentration area and this may be contributing to the lower than desirable pass rate. The current SCED curriculum, which was revised during the Spring 2011 semester, requires only a major (and no minor) of candidates and requires them to take more content courses. This new curriculum follows Indiana's new set of teacher licensing rules, REPA (Rules for Educator Preparation and Accountability), which will go into effect August 2013. According to these rules, the course work making up a content "major" or "minor" for candidates in a program leading to initial licensure must meet or exceed the course work required for a major or minor in that subject offered at the institution to non-education majors. For example, science education majors who pursue a chemistry teaching licensure will now take the same content courses as chemistry majors who pursue a BS in Chemistry in the Department of Chemistry and Physics. This new curriculum requires a significant increase in science content courses, which will improve our candidates' science content knowledge. The SCED majors (except Earth Space Science majors) who will follow this new curriculum will be required to earn degrees in both science education and a content discipline (i.e. Chemistry, Biology, or Physics). Since ISU does not have an "Earth Space Science" major for non-education majors, we developed a science education curriculum for "Earth Space Science" teacher licensure that contains most of the courses as the bachelor's degree in the Earth and Environmental Systems major. Science education majors who pursue two degrees will also have two academic advisors—one from the science department and another from the SCED program. This will be helpful to our candidates as they study science content courses. Finally, with a more stable faculty in the Center for Science Education, as well as in Biology and Earth and Environmental Systems, we expect to improve consistency and follow up in advising. We expect an increase in the passing rate on the PRAXIS II exams in the future.

Professional and pedagogical knowledge, skill, and dispositions in the teaching of science

During the process of preparing for the NCATE assessment, we realized that our assessment tools did not fully include the NSTA standards. For example, NSTA S4 (Issues) and S7 (Science in the Community) had not been assessed before Fall 2010. Even though we covered topics related to these standards, we did not have any assessment data. Thus, we adopted some assignments for SCED398L (e.g., SCED 398L alternative energy project, SCED398L community resources project) and started to assess the assignments to collect data related to these two standards in Fall 2010. We will keep emphasizing these topics in our science methods courses and evaluate our candidates' outcomes.

During the process of revising our NCATE report based on the reviewers' comments, we added NSTA S4 (Issues), S7 (Science in the Community) and S2 (Nature of Science) to SCED 398L unit plan. When our candidates develop their unit plan, they are required to plan how to combine these three standards to their unit teaching along with the main target concepts, as of Fall, 2011. After teaching their unit, our candidates also reflect on their unit teaching not only science content and inquiry, but also Issues, Science in the Community and Nature of Science. In addition, we connected these standards to our teaching portfolio assessment. We will keep emphasizing these standards in our science methods courses and evaluate our candidates' outcomes. Therefore, we have three additional assessments for these standards: (a) additional projects in 398L; (b) requirements added to the Unit Plan assessment; and (c) requirements added to the Portfolio assessment. We will continue to monitor these data to see if additional assessments of these standards are necessary.

The teaching portfolio assessment has been an efficient tool to include many NSTA standards, since it includes candidates' outcomes from their SCED396L and 398L course work and field experiences. We collected teaching portfolio assessment data for the past three years. We will continue to elaborate the teaching portfolio format to increase the quality of our candidates' teaching portfolios.

We developed a new assessment tool for clinical practice and started to use it in Spring 2011. The new assessment tool is a science specific evaluation checklist that mirrors all of the NSTA standards. We used this new assessment along with the general evaluation form to evaluate our candidates' clinical practice. Using the new tool will provide evidence that shows how our candidates' clinical practice experience meets NSTA standards.

We conducted a survey to investigate candidates' experiences conducting scientific research in their field. On the open-ended survey, our candidates were asked to describe the experiences they have had with scientific research aside from simple lab procedures conducted during class time (i.e., "doing" science, scientific investigation). These survey data may be counted as indirect evidence. Based on NCATE reviewers' comments, we also started to collect direct evidence for knowledge of research and investigation (e.g., candidates' research report) in Fall 2011. Our candidates usually experience scientific investigation when they take their major science content courses. We now require our candidates to submit their science investigation outcomes from their science content courses.

Student learning in science
We formerly assessed our candidates' impact on student learning in science with the Unit Report assessment emanating from the CIMT Department. The unit report is a tool used across the university for all teaching subjects. Thus, the rubric for assessing the unit report does not include specific components that are unique to science teaching. Based on the comments from the first NCATE review, we developed a science teaching specific rubric to evaluate our candidates' effects on student learning during their field experiences. When our candidates take SCED398L, they are required to teach one unit including more than five science lessons in a high school. Based on their SCED396L experience of developing lesson plans, candidates develop a unit plan in which more than five lessons are unified in the same conceptual framework. After teaching their unit, the candidates are required to reflect upon their teaching practice. This reflection includes two parts: Effects on Student Learning and Personal Reflection. Even though "Effects on Student Learning" is a part of unit plan assessment, we developed a science specific rubric for "Effects on Student learning" and provided separate data only for this component (see Assessment 5). For Effects on Student Learning, our candidates need to address how their unit teaching affects student learning in terms of science content (S1), inquiry (S3), Nature of Science (S2), community in science (S7), and issues (S5). For personal reflection, the candidates must critically analyze the unit they have taught. They also need to address what they have learned from their teaching practice, whether they would make changes if they were to teach the unit again, and why they would make these changes (S10-b, c).We will keep collecting data using this rubric.

SCED program
One of the reasons we have only one or two years of data for some assessments has been transitions in the faculty in our unit. The director for the SCED program has been an interim position for the past several years. In order to develop our SCED program, we hired a new SCED director in 2011. Currently, we have a director of science education program, tenure track faculty, and instructor. Since our new director has a great deal of experience in science education administration, teaching, and research, we predict our program will improve significantly.

Our SCED advisory committee, consisting of tenured faculty from each science department, meets regularly to discuss enrollments, identify potential curricular changes and identify the strengths and weaknesses of assessment in the core content-pedagogy courses. In addition to SCED curricular changes, the advisory group has an oversight role with respect to potential curricular changes in the content areas as proposed by individual departments. Finally, the SCED advisory committee annually reviews the Praxis I and Praxis II performance of SCED majors—as well as the student teaching experiences. We believe that this SCED advisory committee has contributed to SCED program development. We will maintain this committee and meet more often to discuss all concerns for the improvement of the SCED program.

Already since the Fall of 2011, we have made significant improvements to our recruitment, advisement, and communication processes with our preservice teachers. Some of these activities include revamping our Center's website to include clear and up-to date-explanations of curriculum programs, printing comprehensive and clear curriculum documents and check lists for graduation, giving recruitment talks in biology and chemistry classes, producing a new brochure, establishing a new scholarship for our majors, and advising our students in a consistent and timely manner. Our visions for the Science Education Program at ISU are first to revitalize our program to provide top tier teacher education for our majors. Second, we plan to involve our students more proactively in the civic engagement and experiential learning themes of the university. For example, we currently have one science education major involved in a bat education extension project and three involved in planning an earth day celebration at a local elementary school. Third, we plan to involve our students in undergraduate research in science education and have one student currently serving in that capacity.

In summary, the goal of the performance-based assessment regimen detailed in this summary and the structure of the current SCED curriculum at ISU is to consistently update and revise the program as necessary. Based on recent curriculum revisions and improved advising practices, the SCED program continues to produce high quality science teachers who meet state and national licensure requirements. Finally, the overall success of the SCED program continues to be a by-product of inter-college collaborations between the Colleges of Arts & Sciences and Education.

SECTION VI - FOR REVISED REPORTS OR RESPONSE TO CONDITIONS REPORTS ONLY

1. For Revised Reports: Describe what changes or additions have been made to address the standards that were not met in the original submission. Provide new responses to questions and/or new documents to verify the changes described in this section. Specific instructions for preparing a Revised Report are available on the NCATE web site at

http://www.ncate.org/Accreditation/ProgramReview/ProgramReportSubmission/RevisedProgramReports/tabid/453/Default.aspx

For Response to Conditions Reports: Describe what changes or additions have been made to address the conditions cited in the original recognition report. Provide new responses to questions and/or new documents to verify the changes described in this section. Specific instructions for preparing a Response to Conditions Report are available on the NCATE web site at http://www.ncate.org/Accreditation/ProgramReview/ProgramReportSubmission/ResponsetoConditionsReport/tabid/454/Default.aspx

(Response limited to 24,000 characters.)

Section VI. Revisions to Previous SPA report for Science Education

Standard One/Content- Met with conditions

1. Comment: Assessment 5 does not provide evidence that candidates successfully demonstrate effects on student learning using science-specific concepts (NSTA 1a).

Response: We added a science specific assessment to Assessment 5 , "Effects on Student Learning." Assessment 5 now includes a set of key questions to which candidates respond with respect to the effects of their own teaching on students' learning. One question focuses specifically on the candidates providing evidence of student science content learning. Secondly, we developed new scoring guide criteria to evaluate candidates' competency in reflecting on student learning (see Assessment 5, pgs. 1-4).

2. Comment: Assessment 7 does not provide evidence of candidates' ability to design, conduct, report and evaluate investigations in a science discipline (NSTA 1d-1e).

Response: Based on this comment, we began to collect data on candidates' discipline-specific scientific investigations in Fall, 2011. We now have a rubric to evaluate the degree to which our students design, conduct, report and evaluate investigations in a science discipline (See Assessment 7, Evaluation Reports of Scientific Investigation, pgs. 3-5). We will continue to collect data on this activity and provide additional experiences as necessary.

Standard Two/Nature of Science- Met with conditions

3. Comment: Assessment 5 does not provide evidence that candidates successfully demonstrate an understanding of or ability to convey the Nature of Science (NSTA 2c).

Response: We added a science specific assessment to Assessment 5 , "Effects on Student Learning." Assessment 5 now includes a set of key questions to prompt candidates to demonstrate effects of their own teaching on students' learning about the Nature of Science. One question focuses specifically on how the candidates assessed Nature of Science learning. Secondly, we added a new required section in which candidates reflected on their own Nature of Science teaching(see Assessment 5, scoring guide and data, pgs. 1-4).

Standard Three/Inquiry- Met with conditions

4. Comment: Assessment 5 does not provide evidence that candidates successfully demonstrate how to engage students in developmentally appropriate inquiries (NSTA 3b).

Response: We added a science specific assessment to Assessment 5 , "Effects on Student Learning." Assessment 5 now includes a set of key questions to prompt candidates to demonstrate effects of their own teaching on students' learning about inquiry. They are required to plan inquiry-based lessons, demonstrate how well their students met the learning outcomes, and reflect on their own inquiry-based teaching (see Assessment 5, scoring guide and data, pgs. 1-4).

5. Comment: Assessment 8 does not address the candidates' knowledge and understanding of inquiry (NSTA 3a, 3b)

Response: We revised one component of Assessment 8, "Alternative Energy Project" to assess candidates' understanding of inquiry. The "Alternative Energy Project" utilizes a problem-based learning model including research on a real world problem. The activity is designed to foster students' understanding of the processes and approaches of multiple types of inquiry (S3). We also developed a new rubric for assessing this assignment (see Assessment 8, pgs. 2-3).

Standard Four/Issues in Science- Met with conditions

6. Comment: Assessment 3 on planning does not provide evidence that candidates adequately incorporate societal issues and scientific problems into their lesson plans (NSTA 4b).

Response: Response: We added a component to the Unit Plan, Assessment 3, for students to describe how they have incorporated science-related social issues into their unit (see Assessment 3, pgs. 5-9)

7. Comment: "The effects on student learning assessment does not demonstrate candidates' ability to provide effects on student learning in the analysis of scientific problems and relating these to the knowledge, goals and value to the students (NSTA 4b)."

Response: In Assessment 5, “Effects on Student Learning” we added key questions to prompt candidates to reflect on the effectiveness of their teaching on students’ learning regarding science-related social issues (see Assessment 5, pgs. 1-4).

Standard Seven/Science in the Community- Not met.

8. Comment: “The assessments used to provide evidence for this standard do not address candidates’ knowledge and ability to identify ways to relate science to the community, involve stakeholders, and use community resources to promote the learning of science, or involve students successfully.”

Response: We added a component to the Unit Plan, Assessment 3, for students to describe how they will use community resources in their unit teaching (see Assessment 3, pgs. 5-9) In Assessment 5, “Effects on Student Learning” we added key questions to prompt candidates to reflect on how using community resources influenced student learning (see Assessment 5, pgs. 1-4). Further, we added an assignment to the methods course, SCED 398L, in which groups of students research local community resources that relate to science and mapped these onto the science curriculum and standards. They then create an action plan for using these resources in the classroom (see Assessment 8, including rubric and data, pgs. 3-4).

Standard Nine/Safety and Welfare- Not met.

9. Comment: Assessment 6 previously did not include rubrics for assessing the assignment, “Safety Module.” Assessment 4 previously lacked data from the field.

Response: In Assessment 6, after learning the safety topics, candidates are required to prepare a safety module and include it in their teaching portfolio. The safety module consists of a safety contract, safety quiz, safety annual plan including safety guidelines for students and safety design/plan of science classroom. The rubric and data may be seen in Assessment 6, pgs. 1-2. For Assessment 4, we developed a science-specific rubric for evaluation of teaching in the clinical practice, including all of the components related to safety and welfare. Starting in Spring of 2011, we began to use the new rubric to assess students during clinical practice. The rubric and the data we have collected thus far are in Assessment 4, pgs. 35.

Please click "Next"

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