

April, 2013



COLLEGE OF EDUCATION

DEPARTMENT OF TEACHER EDUCATION

**SCIENCE
SCED M. Ed.**

**ANNUAL ASSESSMENT REPORT
SUBMITTED APRIL, 2013**

**FOR THE REPORTING PERIOD
FALL, 2011 – FALL 2012**

**FOR QUESTIONS ABOUT THIS REPORT, PLEASE EMAIL
THE COE ASSESSMENT COORDINATOR, DR. BRUCE
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**Program Report for the
Preparation of Science Teachers
National Science Teachers Association (NSTA)
2004 Standards¹**

NATIONAL COUNCIL FOR ACCREDITATION OF TEACHER EDUCATION

C O V E R S H E E T

Institution University of Arkansas at Little Rock (UALR) **State** AR

Date submitted March 28, 2013

Name of Preparer Rene Carson

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Program documented in this report:

Name of institution's program (s) Graduate Secondary Education

Grade levels for which candidates are being prepared 7-12

Degree or award level M.Ed.

Is this program offered at more than one site? **Yes** **No**

If yes, list the sites at which the program is offered _____

Title of the state license for which candidates are prepared
Secondary Life-Earth or Physical Earth

Program report status:

- Initial Review**
- Response to a Not Recognized Decision**
- Response to National Recognition With Conditions**
- Response to a Deferred Decision**

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**

Program report information on the web: <http://www.ncate.org/institutions/process.asp?ch=10>.

To download report forms: <http://www.ncate.org/institutions/programStandards.asp?ch=4>.

SECTION I—CONTEXT

I.1. The Arkansas Legislature requires any public higher education institution licensing secondary science teachers to pass the national accrediting association and be NCATE accredited. The UALR Secondary Education program is aligned with the National Science Teachers Association Standards (NSTA), Arkansas Teacher Licensure Standards (ATLS), and the UALR College of Education (COE) Conceptual Frameworks.

Title II definitions require program completers pass required assessments in addition to completion of courses on the candidate’s degree plan. Candidates in the initial licensure track of the M.Ed. in Secondary Education are required to pass Arkansas required Praxis II assessments as of spring 2001.

The science education licensure program is housed in the School of Education at UALR. It is an initial teaching certificate program that provides initial licensure in secondary (grades 7-12) Life-Earth or Physical-Earth at the master’s degree level for those who already hold a bachelor’s degree or the equivalent in science. The program works with the Arkansas Department of Education (ADE) to allow candidates who are teaching on a provisional licensure to receive an initial licensure while enrolled in the M. Ed. Program. The program is a single field, Life-Earth or broad field Physical-Earth program that prepares a teacher about equally in two teaching disciplines. To be certified in secondary science all candidates must pass the Praxis II in Life (235) and Earth (571) Content or Physical (481) and Earth (571) Content, and Life (234) or Physical (483) Science Pedagogy.

I. 2. During the field experiences, candidates are expected to demonstrate application of each of the NSTA Standards determined by the content to be taught. These experiences are considered as one form of performance assessment by the secondary faculty at UALR. Therefore, the field experiences and internship will be listed as applicable assessments from section II NSTA standards.

Field Experience: During their 30 hours per practicum course: SCED 7103 and 7106 candidates observe science classes, assist with paperwork and other teaching duties, and teach the application of science concepts lessons. Each lesson is written with the objectives specifically aligned to the Arkansas frameworks and the NSES standards. In addition, the candidate must show in the lesson plan how the NSES standards are being met through the lesson’s activities. The following chart defines the required hours of observation and number of supervised evaluations.

Type of Field Experience	Required hours of observation	Number of Supervised Evaluations
Pre-professional Field Experience (SCED 7103)	30	2
Pre-professional Field Experience (SCED 7106)	30	2
Internship	480	4
Total	540	8

During the SCED 7103, 7104 & 7601 field experience candidates will be assessed on a comprehensive NSTA Observation form to assess the candidates’ ability to effectively teach classroom-based instruction for each of the NSTA Standards and a Pathwise Plus assessment for pedagogical and professional knowledge, skills, and dispositions during classroom instructional sessions with students and interactions as a professional with school personnel. The Pathwise Plus instrument meets Arkansas State Teacher Licensure standards and is divided into four domains: Planning, Classroom Management, Instruction, and Professionalism. The forms are used to

demonstrate candidate competence during the two pre-professional and one Internship field experiences. The assessments are made by the university supervisor and classroom teacher during the candidate's teaching experiences. The Science Pre-pro/Intern Evaluation form which is aligned to all ten NSTA standards was used for years 2005-2006 and 2006-2007. Starting in 2007-2008 candidates are evaluated by a NSTA Safety Standard # 9 form. The Science Pre-pro/Intern Evaluation form was specifically designed to measure how well the candidate addresses the ten NSTA standards. The NSTA Safety Standard #9 form is used to assess the safety and welfare of the learning environment: legal and ethical responsibilities, maintenance and disposal of materials, know and follow emergency procedures, and the care and use of animals.

Following each of the lessons, the candidate, the university supervisor, and the classroom mentor teacher discuss the two assessment forms (Pathwise Plus, and the Science Pre-pro/Intern Evaluation and NSTA Safety Standard # 9 forms) and identify areas of strength and areas needing improvement. In addition, the candidate is asked to write a reflection as a self assessment of how well the lesson objectives were met and how to improve the lesson.

Internship: Candidates complete a full-semester internship in secondary science. Typically, interns teach one or more classes at least twelve weeks and are required to teach the full load for six weeks. Throughout the semester candidates have the daily supervision and counsel of an experienced science teacher. The intern is responsible for developing and retaining a portfolio of lesson plans written with the lesson objectives specifically aligned to the Arkansas Frameworks, National Science Education Standards (NSES) and the NSTA Standards. In addition, the intern must show in the lesson plan how the NSTA Standards are being met through the lesson's activities.

The intern is formally evaluated at least four times during the internship by the university supervisor and classroom mentor teacher using two evaluation forms: Pathwise Plus and The Science Pre-pro/Intern Evaluation form with focus on Standard # 9: Safety and Welfare which is designed to measure how well the candidate addresses the ten NSTA standards.

A conference follows each observed lesson where the intern, university supervisor and classroom teacher discuss the two assessment forms (Pathwise Plus, and the NSTA Pre-pro/Intern Evaluation form with focus on Standard # 9: Safety and Welfare), review the intern's lesson plan portfolio, and identify areas of strength and areas needing improvement. The intern must write a reflection which is a self-assessment of how well the lesson objectives were met and how to improve the lesson.

SCED Program Assessment for Field Experience: The Pathwise Plus and the Science Pre-pro/ Intern Evaluation form with focus on Standard # 9: Safety and Welfare are returned to the science university supervisor where all forms (each semester) are aggregated to assess the effectiveness of candidate performance in meeting the State of Arkansas' teacher licensure standards and the eight NSTA standards.

Teacher Candidate Work Sample: The teacher education candidate will submit a student work sample during their Internship that contains a pre and post test over the material to be covered. The work sample may encompass a single lesson or a complete unit. The lesson should demonstrate the association with the NSTA standards and contain the Arkansas Frameworks for teachers. Candidates should develop a graph showing learning from the pre to the post test and a reflection on the effectiveness of the lesson. The candidate should include a plan to improve teaching the lesson such as adding or deleting specific instructions or content. An analysis will be done on the student work and a reflection will be written regarding effectiveness or lack of effectiveness.

I.3. SCED Initial Licensure Track Admission Requirements

The initial licensure track in graduate secondary education leads to licensure in a teaching specialty. Students who start at any time of the year other than the fall semester will take at least three semesters to complete the licensure classes. Most courses are offered in the evening for the

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convenience of students who work full time. Practicums require a field placement in a local school. Admission requirements are:

- Baccalaureate or equivalent from an accredited institution in one of the following teaching specialty areas: art; drama/speech; English language arts; life/earth science; physical/earth science; science; vocal music; business, health and physical education; social studies or foreign language.
- GPA of 2.75 and PRAXIS I scores of 171 in mathematics (or 317 on the computer-based test), 172 in reading (or 319 on the computer-based test), and 173 in writing (or 320 on the computer-based test).
- Candidates who have completed the baccalaureate degree and lack no more than 12 hours in the specialty area may be admitted to the program and may complete deficiencies concurrently with a master's program. Deficiencies in the science content area are determined by a pre-assessment grid which assesses GPA, Curriculum, and age of science courses through a transcript evaluation.
- Conditional admission is for candidates who have a cumulative GPA between a 2.5 and 2.74. A candidate seeking full admission must pass the GRE and the Praxis I for reading, writing and mathematics and have faculty approval to enter the program.
- Interview with faculty for assessment of dispositions.

Initial Licensure Track Retention Requirements

Retention to the program requires candidates to maintain a 3.0 GPA with no grades below B. If a candidate's GPA falls below 3.0, the student is placed on academic probation for one semester and given the opportunity to raise his/her GPA. A student awarded a grade below B is required to retake the course. (See Attached 1. NSTA Program of study for Initial Licensure Track Program Requirements).

Initial Licensure Track Graduation Requirements

Graduation from the program requires a minimum of 36 graduate credit hours with a GPA of at least 3.0, passing scores on the program portfolio defense and SPA portfolio defense as determined by a committee, and passing scores on all Praxis II examinations required by the Arkansas Department of Education and throughout the program by Pathwise evaluations during field experience.

I.4. The relationship of the Graduate Secondary Education Program to the COE conceptual framework is reflected in the program's learning outcome goals for each student. The Graduate SCED program has two sets of standards for which it is held accountable: the Arkansas Teacher Licensure Standards, and the Specialized Professional Association Standards (SPAs). The program goals listed below are used to meet each set of required standards. In addition to these two sets of standards, we are responsible for preparing our students to succeed in passing the Praxis III performance assessment which is based on Educational Testing Service (ETS)'s Pathwise observation system.

The Conceptual Framework of the College of Education (COE): The mission of the University of Arkansas at Little Rock College of Education is to promote and strengthen the professional development of individuals concerned with education and human resource development in a variety of settings such as schools, colleges and universities, private and corporate organizations, and government agencies. We strive to develop professionals who use state of the art methodologies and technologies. The conceptual framework for the College of Education at the University of Arkansas at Little Rock is "Leaders in Learning demonstrate Communication (C), Specialized Expertise (SE), Professional Development (PD) and a strong commitment to diversity (D) in competency, disposition and behavior." Program goals include:

The Arkansas State Teacher Licensure Standards:

Principle 1: The teacher understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches, can create learning experiences that make these aspects of subject matter meaningful for students and teaches in a manner that links the discipline(s) to other subjects.

Principle 2: The teacher plans curriculum appropriate to the students, to the content, and to course objectives.

Principle 3: The teacher plans instruction based upon human growth and development, learning theory and the needs of students.

Principle 4: The teacher exhibits human relations skills that support the development of human potential.

Principle 5: The teacher works collaboratively with school colleagues, parents/guardians and the community to support students' learning and well-being.

The Secondary Education Program Goals combine the COE Conceptual Frameworks with the five principles defined by Arkansas and are assessed for program admission, Praxis II for program completion, and integrated into core courses SCED 7306 Instructional Skills and Classroom Management, 7106 Instructional Skills Practicum, 7202 Science Supervised Instructional Methods, 7103 Supervised Clinical Teaching and SCED 7601 Internship. The relationship to the COE Conceptual Frameworks and Arkansas Licensure Principals are as follows:

1. **Content:** The candidate understands the central concepts, tools of inquiry and structures of the discipline(s) he or she will be licensed to teach and can link the disciplines to each other (NSTA Standards 1-4, 6,8-9, AR Principal 1, COE Frameworks C, SE, & D).
2. **Planning:** The candidate plans and evaluates curriculum appropriate to the students, to the content, and to the course objectives (NSTA Standards 6, & 8, AR Principal 2, COE Frameworks C, SE, & D).
3. **Instruction:** The candidate plans and conducts instruction effectively using knowledge of human growth and development and learning theory and responding to the needs of the students (NSTA Standards 6, & 8, AR Principal 3, COE Frameworks C, SE, & D).
4. **Human relations:** The candidate exhibits human relations skills that support the development of human potential (NSTA Standards 7, AR Principal 4, COE Frameworks C, SE, & D).
5. **Professionalism:** The candidate works collaboratively with school colleagues, parents/guardians, and the community to support students' learning and well-being (NSTA Standards 10, AR Principal 5, COE Frameworks C, SE, and PD & D).
6. **Research & technology:** The candidate has foundations and dispositions in research, problem solving, reflective thinking and technology for lifelong learning (NSTA Standards 1, 2, & 7, AR Principal 1, COE Frameworks C, SE, PD & D).
7. **Professional Ethics:** Program faculty will interview each candidate prior to admission and assess the candidate's dispositions to the field of education (NSTA Standards 8, AR Principal 5, COE Frameworks C, SE, & D).
8. **Diversity:** the candidate communicates effectively with diverse populations, believing that all children can learn at high levels and persists in helping all children achieve success (NSTA Standards 7 & 8 AR Principal 2 & 3, COE Frameworks SE & D).

Attachment I.5.

The assessment plan for the M.Ed. program consists of the following gateways:	
Number	Gateway
1.	Candidate admission and retention must be in compliance with the Graduate School and College of Education.

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2.	Candidate must complete any required prerequisite skills needed to comply with NSTA standards.
3.	Candidate must pass Praxis II Life & Earth or Physical & Earth Science Content, before field experience admission.
4.	Candidate must pass Praxis II Life or Physical Science Pedagogy before graduation.
5.	Candidate must demonstrate effectiveness through mastery of basic science concepts and be able to apply them to teaching during Clinical Field Assessment.
6.	Candidate must complete 36 hours of graduate study.
7.	Candidate must receive a passing score on Exit NSTA Portfolio.

**#1 ATTACHMENT
Candidate Program of Study
(Degree Plan)**

Student Name: _____ I.D. #: _____

Address: _____ City: _____ State: _____ Zip: _____

Telephone # (H): _____ Date Admitted: _____ Status: _____

Requirements for the degree include a minimum of 36 graduate credit hours, a minimum gpa of 3.0, a portfolio accepted by the committee, and passing scores on all Praxis II examinations required by the Arkansas Department of Education.

Prerequisites for the program include a baccalaureate degree, a content major, and completion of all coursework required by the Arkansas Department of Education or national accreditations agencies in one of the following teaching specialty areas: art, drama/speech; English language arts; life/earth science*; physical/earth science*; mathematics; vocal music; health and P.E. and business. Candidates who have completed the baccalaureate degree and lack no more than 12 hours in the specialty area may be admitted to the program and may complete deficiencies concurrently with the master's program.

In the space to the left of the course number enter a digital (e.g.3) for any course not yet completed which is a specified element of this program of study. Enter a WV for waived, a T for transfer credits (in which case a Transfer of Credit Request should accompany this form) and an APS for an approved program substitute.

15 hours of deficiencies in prerequisites. Deficiencies may be completed with either graduate or undergraduate hours. List any specific deficiencies below or on a separate page.

Sem/ Grade	Course Alpha	Course Number	Course Title
	SCED	7202	Specialized Instructional Methods
	SCED	7103	Supervised Clinical Teaching
	SCED	7306	Instructional Skills and Classroom Management
	SCED	7106	Instructional Skills Practicum
	<input type="checkbox"/> SCED or <input type="checkbox"/> EDFN	5321	Teaching Diverse Adolescents
		7330	Human Development
	SCED	7201	Curriculum Design Pre-reqs SCED 7306 & 7202
	SPED	7301	Foundations of Special Education
	EDFN	7370	Educational Assessment
	EDFN	7303	Intro to Research

	SCED	7601	Internship—Must pass Praxis II Content, have 3.0 GPA, and complete content prerequisites for admission
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Electives: 6 hours in content, education or technology:

Praxis II Passed

Portfolio accepted by committee

Student: _____ Date: _____

Advisor: _____ Date: _____

Associate Dean: _____ Date: _____

*This Program of Study is not official unless signed by the Associate Dean of Education.

#2 Candidate Information

Program: Graduate Secondary Education Initial Program		
Academic Year	# of Candidates Enrolled in the Program	# of Program Completers²
2009-2010	12	2
2010 - 2011	12	5
2011 - 2012	10	5

The numbers do not align since master's candidates enter the program with a varied number of prerequisites to complete based on pre-admission advising. In addition, not all graduate candidates attend full-time and several may be teachers of record under provisional licensure allowed by the ADE. Due to the teacher shortage in the state, these candidates are classroom teachers while completing the master's degree and certification.

3. Faculty Information

Faculty Member Name	Highest Degree, Field, & University	Assignment: Indicate the role of the faculty member ³	Assignment: Indicate the role of the faculty member	Tenure Track (Yes/No)	Scholarship, ⁴ Leadership in Professional Associations, and Service: ⁵ List up to 3 major contributions in the past 3 years ⁶	Teaching or other professional experience in P-12 schools
Judith A. Hayn	Ph.D. English Education University of Kansas	Secondary Teacher Education English Language Arts, First Course Instructional Methods and Classroom Management	Assistant Professor	Yes	(2006). Chapter 8: Diversity in young adult literature.” In J.H. Bushman & K.P. Haas. <u>Using young adult literature in the English classroom</u> . 4 th Edition. Upper Saddle River, NJ: Pearson Merrill Prentice-Hall; (2007). <i>Validation of adolescent literature: Scholarly study through the refereed journal. The emergence of adolescent literature as scholarship</i> . National Council of Teachers of English. New York, NY.; (2005-07 Chair WILLA (Women in Literacy & Life Assembly of NCTE.	7-12, 15 years public schools Omaha, NB; Topeka, KS Clinical Supervision, Pulaski County, AR, area; Inservice, Little Rock, AR
James Fetterly	PhD in Math Education, Florida State	Secondary Teacher Education Mathematics	Assistant Professor	Yes	Fetterly, J., & Wood, B. (Forthcoming). <i>A Causeway for Classroom Creativity: Intellectual</i>	7-12, 7 years public schools Conway, AR

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	University	education, Specialized Instructional Methods; Curriculum Design			<p><i>Uniformity + Intellectual Anarchy = Intellectual Ingenuity.</i> Teaching for High Potential.</p> <p>Fetterly, J., & Wood, B. (Forthcoming). Using mathematics literature: An informal approach to proportional thinking. <i>Arkansas Council of Teacher of Mathematics, 10 (1)</i></p> <p>Sedivy-Benton, A.L., Hunt, A.L., Hunt, T.L., Fetterly, J.M., & Wood, B.K. (forthcoming). Emergence of Successful Online Courses: Faculty and Student Shift. In S. Mukerji & P. Tripathi (Eds.), <i>Handbook of Research on Transnational Higher Education Management</i>. Hershey, PA: IGI Global.</p> <p>Fetterly, J. (2012). The creative mathematical practice of problem posing: Transforming passive recipients into lively learner. <i>Arkansas Council of Teacher of Mathematics, 9 (1), 9-11, 23, 29, 33-34.</i></p>	
Jennifer B. Hune	EdD in Special Education Teacher Preparation, University of Kentucky, Lexington, KY	Special Education Teacher for required Special Education Course	Associate Professor	Yes	<p>Hune, J. B., (2007). Technology application for students with behavioral problems: Preliminary results. SITE Proceedings.</p> <p>Hune, J. B., (2008). Technology application for students with</p>	<p>Special Education National Advisory Committee for ETS (nomination)</p> <p>Organized State CEC Pre-Conference Workshop, November 2006</p>

					behavioral problems: An analysis of the research. SITE Proceedings Hune, J. B., (March, 2008). Technology application for students with behavioral problems; Preliminary Results. SITE Roundtable, 2007	Chair ECCO Head Start Health Education Committee AR CCBD President 2001-2007 Minority Teacher Scholars Grant, administrator, 2005-2008. Minimum \$5,000 per grant. Special Education teacher P-4 Inservice trainer LRSD & Pulaski County Head Start Program
Amanda Nolen	Ph.D. Educational Psychology, Baylor University	Educational Foundations Teacher, Required Assessment Course	Assistant Professor	Yes	Meta-analysis of research in Educational Psychology: Establishing 'Canon' (in progress); Action Research in Education: Addressing Gaps in Ethical Principles and Practices (2007) – <i>Educational Researcher</i> 36(7); Serve on Editorial Board for the Journal of Educational Research; Member of AERA and APA Division 15.	
Rene Carson	Med, UAF	Adjunct Instructor, Research Associate	NA	No	Presidential Awardee, 1998, Einstein Fellow 2005-06, NSTA Board Member, ASTA Board Member, Science Scope Reviewer	34 year Teaching in AR public Schools, Grades 7-12, 6 years at UALR
Elizabeth Fulton	M.Ed. UAF	Adjunct Professor for Science Field Experiences	NA	No	Editor AR Science Teachers Assoc newsletter, Executive Director AR Audubon Ecology Camp	30 yrs teaching experience in AR public schools, grades 7-12; Praxis III Evaluator for

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						ADE, 4 yrs-
Bill Fulton	M.S. UCA,	Adjunct Professor for Science Field Experiences	NA	NA	Retired from Science Curriculum at Arkansas Dept of Ed (36yrs)	Past Board Member for the national Council of State Science Supervisor, Past Exec. Secretary for Arkansas Science Teachers Association (ASTA), President Elect - ASTA - 2009 Science Teacher – Fort Smith School, AR– 3 Yrs., Current licensed in Life/Earth Science in Arkansas, 39 years in education

SECTION II— LIST OF ASSESSMENTS

	Name of Assessment ⁷	Type or Form of Assessment ⁸	When the Assessment Is Administered ⁹
1	[Content Knowledge – Licensure Tests] ¹⁰ Praxis II Scores & Sub Scores Physical Content #481, Physical Pedagogy # 483, Earth Content # 571, Life content # 235, Life Pedagogy # 234	Arkansas State Licensure Tests	Content before Internship and Pedagogy prior to degree completion
2	[Content Knowledge – an assessment of general content knowledge in discipline to be taught] Life-Earth and Physical-Earth Science Pre-assessment Grid	Transcript Evaluation of Science Courses and Match to UALR Bachelors of Science Program Get this Competency requirements for all science teachers, Core and advanced competencies	Before admission to program
3	[Pedagogical and Professional Knowledge, Skills and Dispositions – Planning instruction and assessment] NSTA Ability to Plan	A comprehensive rubric to assess the candidates’ ability to effectively plan classroom-based instruction. The assessment is based on NSTA Standards 1-3, 5-6, & 8-9.	During SCED 7201 Curriculum Design culminating with the NSTA Exit Portfolio defense
4	[Pedagogical and Professional Knowledge, Skills and Dispositions – Student Teaching Assessment] Pathwise Plus and NSTA Pre-pro/Intern Evaluation & Standard 9 Safety and Welfare assessment	Pathwise Plus form developed to include diverse populations and NSTA Pre-pro/Intern Evaluation Form developed to meet all NSTA Standards for years 2005-2007 and NSTA Standard 9 Safety & Welfare assessment rubric for year 2007-2008 (7601 Internship).	SCED 7103 Field I, 7106 Field II and 7601 Internship

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	Name of Assessment⁷	Type or Form of Assessment⁸	When the Assessment Is Administered⁹
5	[Effects on Student Learning] NSTA Effect on Student Learning	Comprehensive Rubric to assess candidate's Internship Student Work Sample based on NSTA standards and meeting all student needs for learning including diverse populations.	SCED 7601 Internship and Exit Portfolio Defense
6	[Pedagogical and Professional Knowledge, Skills and Dispositions – Legal/Safety/Ethical Issues] Safety & Ethical Issues	Comprehensive rubrics on safety standards for: Safety Quiz & Safety Lesson for field experience Internship	SCED 7202 Science Instructional Methods: Safety Quiz & Safety Lesson for field Internship
7	[Content Knowledge – Research & Investigation] Research & Investigation Documentation	Criteria to demonstrate research.	Before admission to program
8	[Content Knowledge – Contextual Content] NSTA Exit Portfolio	Masters Portfolio Defense	Pre Graduation

SECTION III—RELATIONSHIP OF ASSESSMENT TO STANDARDS

NSTA STANDARD ^{11 12}	APPLICABLE ASSESSMENTS FROM SECTION II
<p>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</p> <p>(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;</p>	<p>X #1 X #2 X #3 X #4 <input type="checkbox"/>#5 <input type="checkbox"/>#6 <input type="checkbox"/>#7 <input type="checkbox"/>#8</p>
<p>(b) understand and can successfully convey to students the unifying concepts of science delineated by the National Science Education Standards;</p>	<p>X #1 X #2 X #3 X #4 <input type="checkbox"/>#5 <input type="checkbox"/>#6 <input type="checkbox"/>#7 <input type="checkbox"/>#8</p>
<p>(c) understand and can successfully convey to students important personal and technological applications of science in their fields of licensure;</p>	<p>x#1 x#2 x#3 x#4 <input type="checkbox"/>#5 <input type="checkbox"/>#6 <input type="checkbox"/>#7 <input type="checkbox"/>#8</p>
<p>d) understand research and can successfully design, conduct, report evaluate investigations in science</p>	<p>x#1 x#2 x#3 x#4 <input type="checkbox"/>#5 <input type="checkbox"/>#6 <input type="checkbox"/>#7 <input type="checkbox"/>#8</p>
<p>(e); and understand and can successfully use science to process and report data, and solve problems, in their field(s) of licensure.</p>	<p>X #1 X #2 X #3 X #4 <input type="checkbox"/>#5 <input type="checkbox"/>#6 <input type="checkbox"/>#7 <input type="checkbox"/>#8</p>

¹¹ NCATE will provide a link to the full set of SPA standards, including indicators/elements/dimensions and supporting explanations.

¹² Dimensions of standards are split 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.

NSTA STANDARD ^{11 12}	APPLICABLE ASSESSMENTS FROM SECTION II
<p>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:</p> <p>(a) understand the historical and cultural development of science and the evolution of knowledge in their discipline;</p>	<p>X #1 X #2 X #3 X #4 <input type="checkbox"/>#5 <input type="checkbox"/>#6 <input type="checkbox"/>#7 <input type="checkbox"/>#8</p>
<p>(b) understand the philosophical tenets, assumptions, goals, and values that distinguish science from technology and from other ways of knowing the world;</p>	<p>X #1 X #2 X #3 X #4 <input type="checkbox"/>#5 <input type="checkbox"/>#6 <input type="checkbox"/>#7 <input type="checkbox"/>#8</p>
<p>(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</p>	<p>X #1 X #2 X #3 X #4 <input type="checkbox"/>#5 <input type="checkbox"/>#6 <input type="checkbox"/>#7 <input type="checkbox"/>#8</p>
<p>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:</p> <p>(a) understand the processes, tenets, and assumptions of multiple methods of inquiry leading to scientific knowledge;</p>	<p>X #1 X #2 X #3 X #4 <input type="checkbox"/>#5 <input type="checkbox"/>#6 <input type="checkbox"/>#7 <input type="checkbox"/>#8</p>
<p>(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.</p>	<p>X #1 X #2 X #3 X #4 <input type="checkbox"/>#5 <input type="checkbox"/>#6 <input type="checkbox"/>#7 <input type="checkbox"/>#8</p>

NSTA STANDARD ^{11 12}	APPLICABLE ASSESSMENTS FROM SECTION II
<p>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:</p> <p>(a) understand socially important issues related to science and technology in their field of licensure, as well as processes used to analyze and make decisions on such issues;</p>	<p>X #1 X #2 <input type="checkbox"/> #3 <input type="checkbox"/> #4 <input type="checkbox"/> #5 <input type="checkbox"/> #6 <input type="checkbox"/> #7 <input type="checkbox"/> #8</p>
<p>(b) engage students successfully in the analysis of problems, including considerations of risks, costs, and benefits of alternative solutions; relating these to the knowledge, goals and values of the students.</p>	<p><input type="checkbox"/> #1 <input type="checkbox"/> #2 <input type="checkbox"/> #3 <input type="checkbox"/> #4 <input type="checkbox"/> #5 X #6 X #7 <input type="checkbox"/> #8</p>
<p>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:</p> <p>(a) understand the curricular recommendations of the National Science Education Standards, and can identify, access, and/or create resources and activities for science education that are consistent with the standards;</p>	<p><input type="checkbox"/> #1 <input type="checkbox"/> #2 X #3 X #4 X #5 X #6 <input type="checkbox"/> #7 X #8</p>
<p>(b) plan and implement internally consistent units of study that address the diverse goals of the National Science Education Standards and the needs and abilities of students.</p>	<p><input type="checkbox"/> #1 <input type="checkbox"/> #2 <input type="checkbox"/> #3 X #4 X #5 <input type="checkbox"/> #6 <input type="checkbox"/> #7 x#8</p>

NSTA STANDARD ^{11 12}	APPLICABLE ASSESSMENTS FROM SECTION II
<p>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:</p> <p>(a) identify ways to relate science to the community, involve stakeholders, and use community resources to promote the learning of science;</p>	<p><input type="checkbox"/>#1 <input type="checkbox"/>#2 <input type="checkbox"/>#3 X #4 <input type="checkbox"/>#5 <input type="checkbox"/>#6 <input type="checkbox"/>#7 X #8</p>
<p>(b) involve students successfully in activities that relate science to resources and stakeholders in the community or to the resolution of issues important to the community.</p>	<p><input type="checkbox"/>#1 <input type="checkbox"/>#2 <input type="checkbox"/>#3 x#4 <input type="checkbox"/>#5 <input type="checkbox"/>#6 <input type="checkbox"/>#7 x#8</p>
<p>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:</p> <p>(a) use multiple assessment tools and strategies to achieve important goals for instruction that are aligned with methods of instruction and the needs of students;</p>	<p><input type="checkbox"/>#1 <input type="checkbox"/>#2 X #3 X #4 X #5 <input type="checkbox"/>#6 <input type="checkbox"/>#7 X #8</p>
<p>(b) use the results of multiple assessments to guide and modify instruction, the classroom environment, or the assessment process;</p>	<p><input type="checkbox"/>#1 <input type="checkbox"/>#2 X #3 X #4 X #5 <input type="checkbox"/>#6 <input type="checkbox"/>#7 X #8</p>
<p>(c) use the results of assessments as vehicles for students to analyze their own learning, engaging students in reflective self-analysis of their own work.</p>	<p><input type="checkbox"/>#1 <input type="checkbox"/>#2 x#3 <input type="checkbox"/>#4 X #5 <input type="checkbox"/>#6 <input type="checkbox"/>#7 X #8</p>

NSTA STANDARD ^{11 12}	APPLICABLE ASSESSMENTS FROM SECTION II
<p>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:</p> <p>(a) understand the legal and ethical responsibilities of science teachers for the welfare of their students, the proper treatment of animals, and the maintenance and disposal of materials;</p>	<p><input type="checkbox"/>#1 <input type="checkbox"/>#2 <input checked="" type="checkbox"/>#3 <input checked="" type="checkbox"/> #4 <input type="checkbox"/>#5 <input checked="" type="checkbox"/> #6 <input type="checkbox"/>#7 <input type="checkbox"/>#8</p>
<p>(b) know and practice safe and proper techniques for the preparation, storage, dispensing, supervision, and disposal of all materials used in science instruction;</p>	<p><input type="checkbox"/>#1 <input type="checkbox"/>#2 <input type="checkbox"/>#3 <input checked="" type="checkbox"/> #4 <input type="checkbox"/>#5 <input checked="" type="checkbox"/> #6 <input type="checkbox"/>#7 <input type="checkbox"/>#8</p>
<p>(c) know and follow emergency procedures, maintain safety equipment, and ensure safety procedures appropriate for the activities and the abilities of students;</p>	<p><input type="checkbox"/>#1 <input type="checkbox"/>#2 <input type="checkbox"/>#3 <input checked="" type="checkbox"/> #4 <input type="checkbox"/>#5 <input checked="" type="checkbox"/> #6 <input type="checkbox"/>#7 <input type="checkbox"/>#8</p>
<p>(d) treat all living organisms used in the classroom or found in the field in a safe, humane, and ethical manner and respect legal restrictions on their collection, keeping, and use.</p>	<p><input type="checkbox"/>#1 <input type="checkbox"/>#2 <input type="checkbox"/>#3 <input checked="" type="checkbox"/> #4 <input type="checkbox"/>#5 <input checked="" type="checkbox"/> #6 <input type="checkbox"/>#7 <input type="checkbox"/>#8</p>

IV.1.1. The names of all licensure tests or professional examinations required by the state for content and pedagogical or professional knowledge.

The Praxis Series assessments offered by the Educational Testing Services (ETS) is the test required for state licensure in Arkansas. It provides educational tests and other services that Arkansas uses as part of its teaching licensing certification process. The Praxis II® tests measure general and subject-specific knowledge and teaching skills. Candidates for initial licensure must provide verification of successful completion of the grade level appropriate Praxis II: Subject Assessments (when applicable).

This program requires candidates to report Praxis II scores (below) sub-scores as a requirement for graduation.

Physical/Earth Science

20571 Earth and Space Sciences: Content Knowledge (calculators prohibited)

20481 Physical Science: Content Knowledge (calculators prohibited)

30483 Physical Science: Pedagogy (calculators prohibited)

Life/Earth Science

20571 Earth and Space Sciences: Content Knowledge (calculators prohibited)

20235 Biology: Content Knowledge (calculators prohibited)

30234 Life Science: Pedagogy (calculators prohibited)

IV.1.2. Description of the alignment between licensure test data and applicable NSTA standards.

NSTA approves the use of Praxis II as a measure of science content.

IV.1.3. A brief analysis of the data findings:

In the past three years fourteen candidates have take the Praxis II test and received a state passing score. All candidates must pass Praxis II for program completion. Fourteen candidates took the Earth and Space Science Content Knowledge (20571), because AR Licensure is Life/Earth Science or Physical /Earth Science and all candidates must take the Earth Science. Four candidates took Physical Science Content Knowledge (20481). Four candidates took Physical Science Pedagogy (30483). Eleven candidates took Biology Content Knowledge (20235) and eleven candidates took Life Science Pedagogy (30234). Some candidates wanted to be licensed in both Life/Earth and Physical/Earth. Pass rate is 100%.

Earth and Space Science Content Knowledge (20571) – Pass Rate 100%				
N=	Passing Score=	Range	Mean	Median
5	145			
2011 - 2012	5 Program Completers	32	161	155
2010-2011	5 Program Completers	14	154	152
2009-2010	2 Program Completers	10	170	170

Physical Science Content Knowledge (20481) – Pass Rate 100%				
N=	Passing Score=	Range	Mean	Median
0	142			
2011-2012	0 Program Completers			
2010-2011	2 Program Completers	3	167	167
2009-2010	1 Program Completers		173	173
Biology: Content Knowledge (20235) – Pass Rate 100%				
N=	Passing Score =	Range	Mean	Median
5	142			
2011-2012	5 Program Completers	51	167	165
2010-2011	3 Program Completers	18	155	153
2009-2010	1 Program Completer		158	158

IV.1.4. The percent of correct answers of sub-scores for all academic years.

The table illustrates the percent of Sub Scores out of a possible 100 % for Earth and Space Science Content Knowledge (20571). The tests had different numbers of questions and therefore the mean was not calculated.

Sub-Test	2011-2012 N=5	2010-11 N=5	2009-2010 N=2
I. Basic Scientific Principles of Earth & Space Science	70%	58%	80%
II. Tectonics and Internal Processes	68%	65%	72 %
III. Earth Materials and Surface Processes	72%	64%	83 %
IV. History of the Earth and its Life-Forms	48%	54%	87%
V. Earth’s Atmosphere	80%	77%	77%
VI. Astronomy	73%	77%	61%

The table illustrates the percent of Sub Scores out of a possible 100 % for Physical Science Content Knowledge (20481).

Sub-Test	2011-2012 N=0	2010-2011 N=2	2009-2010 N=1
I. Methodology: Math, Measurement, Data: Science, Technology, and Society	0	61%	90%
II. Laboratory Procedures and Safety: Matter and Energy	0	80%	64%
III. Heat and Thermodynamics; Atomic and Nuclear Structure	0	64%	89%

The table illustrates the percent of Sub Scores out of a possible 100 % for Biology Science Content Knowledge (20235). The tests had different number of questions and therefore the mean was not calculated.

Sub-Test	2011-2012 N=5	2010-2011 N=3	2009-2010 N=1
I. Basic Principles of Science	61%	70%	58%
II. Molecular and Cellular Biology	70%	62%	58%
III. Classical Genetics and Evolution	63%	52%	77%
IV. Diversity of Life, Plants, and Animals	68%	54%	76%
V. Ecology	82%	63%	64%
VI. Science, Technology, and Society	80%	68%	80%

IV.1.5. Attachment of assessment documentation, including:

(a) the assessment tool or description of the assignment;

**Earth and Space Sciences: Content Knowledge Categories (20571) (calculators prohibited)
Passing Score 145, Time=2 hours, Questions=100, Format=Multiple-choice questions.**

I. Basic Scientific Principles of Earth and Space Sciences have approximately 9-10 questions and equals approximately 8-12% of the examination.

II. Tectonics and Internal Earth Processes have approximately 18-22 questions and equals approximately 18-22 % of the examination.

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III. Earth Materials and Surface Processes have approximately 23-27 questions and equals approximately 23-27% of the examination.

IV. History of the Earth and its Life-Forms has approximately 13-17 questions and equals approximately 13-17% of the examination.

V. Earth's Atmosphere and Hydrosphere have approximately 18-22 questions and equals approximately 18-22% of the examination.

VI. Astronomy has approximately 8-12 questions and equals approximately 8-12% of the examination.

*The Earth and Space Sciences: Content Knowledge test is designed to assess whether an examinee has the knowledge and competencies necessary for a beginning teacher of Earth and Space Sciences in a secondary school.

*The 100 multiple-choice questions address the examinee's knowledge of fundamental scientific concepts, methods, principles, phenomena, and interrelationships.

*Questions are derived from topics typically covered in introductory college-level courses in the Earth and Space Sciences, including geology, meteorology, oceanography, astronomy, and environmental science.

*The questions require a variety of abilities, including an emphasis on the comprehension of critical concepts, analysis to address and solve problems, and an understanding of important terms. Some questions may require the examinee to integrate concepts from more than one content area.

*The test covers the six broad content areas of basic scientific principles of Earth and Space Sciences, tectonics and internal Earth processes, Earth materials and surface processes, history of the Earth and its life-forms, Earth's atmosphere and hydrosphere, and astronomy.

*In addition, a substantial number of the questions require knowledge and/or abilities listed under the content area of History and Nature of Science.

Biology: Content Knowledge Categories (20235) (calculators prohibited)

Passing Score 142, Time=2 hours, Questions=150, Format=Multiple-choice questions.

I. Basic Principles of Science has approximately 12 questions and equals approximately 8% of the examination.

II. Molecular and Cellular Biology have approximately 38 questions and equals approximately 5% of the examination.

III. Classical Genetics and Evolution have approximately 23 questions and equals approximately 15% of the examination.

IV. Diversity of Life, Plants, and Animals has approximately 45 questions and equals approximately 30% of the examination.

V. Ecology has approximately 22 questions and equals approximately 15% of the examination.

VI. Science, Technology, and Society have approximately 10 questions and equals approximately 7% of the examination.

*The Biology: Content Knowledge test is designed to assess whether an examinee has the knowledge and competencies necessary for a beginning teacher of biology in a secondary school. The development of the test questions and the construction of the test reflect the National Science

Education Standards (NSES) and recognize that there are conceptual and procedural schemes that unify the various scientific disciplines.

*The 150 multiple-choice questions address examinees' knowledge of the biological sciences, the basic principles of science, and the issues and applications concerning science, technology, and society.

Questions are derived from topics typically covered in an introductory college-level biology course.

*Within these content areas, the test questions require a variety of abilities and knowledge, including definition of terms, comprehension of critical concepts, and application and analysis, to address and solve problems.

Physical Sciences: Content Knowledge Content Categories (20481) (calculators prohibited)

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Passing Score 145, Time=1 hours, Questions=60, Format=Multiple-choice questions.

I. Methodology; Math, Measurement, Data; Science, Technology, and Society have approximately 20 questions and equals approximately 33% of the examination.

II. Laboratory Procedures and Safety; Matter and Energy have approximately 22 questions and equals approximately 37% of the examination.

III. Heat and Thermodynamics; Atomic and Nuclear Structure have approximately 18 questions and equals approximately 30% of the examination.

*The Physical Science: Content Knowledge test measures fundamental knowledge common to physics and chemistry, and competencies necessary for a beginning teacher of one of the physical sciences in a secondary school. Examinees have completed or nearly completed a bachelor's degree program in one of the physical sciences, with appropriate coursework in education.

*The 60 multiple-choice questions address examinees' breadth of knowledge in topics common to physics and chemistry, embracing scientific principles, facts, methodology, philosophy, laboratory procedures, and data manipulation. The test covers the content areas of atomic and nuclear structure, heat and thermodynamics, matter and energy, and science, technology, and society.

*Topics are typically covered in one of the introductory college-level physical science courses, although some questions of a more advanced nature are included since secondary school instructors must understand the subject matter from a more advanced viewpoint than that presented to their students.

IV. 2. 1. A brief description of the assessment and its use in the program

A prerequisite evaluation form (2.5.a.) is used prior to a candidate's admission to the program to assess content knowledge preparedness of a candidate receiving a Bachelors of Science. Since the licensure is a single field for Life/Earth and a broad field for Physical/Earth, assessments are for Life/Earth or Physical/Earth. Due to the fact that Earth Science is not taught on the AP level in Arkansas, the Life/Earth is addressed as a single field. However, the Earth science Praxis II must be passed. For a Physical Science License, the broad field of Physics, Chemistry and Earth Science must be addressed. Candidates who have deficiencies must complete all courses (and may do so concurrently while in the program if they lack no more than 12 hours) prior to degree completion. All prerequisite courses must reflect a C or better to be accepted. The prerequisite evaluation form is based on the UALR science courses and their match to the NSTA Competency requirements.

IV. 2. 2. A description of how this assessment specifically aligns with the standards it is cited for in Section III

In order to be admitted into the Initial Licensure Program teacher candidates must have a 2.75 overall GPA or 3.0 in the last 60 hours or a 3.0 in their science courses to enter the program. Candidates must have a bachelor's degree in science (biology, chemistry, physics or earth science) or the Equivalent Science Prerequisite Requirements. The prerequisite evaluation is used to assess science courses (see 2.5.a.) and must be signed by the advisor and Associate Dean and submitted with the program of study. Candidates who are in the provisional licensure track which allows them to seek Initial Licensure while employed by the public schools must have passed Praxis II Life/Earth Content or Physical/Earth Content to be awarded a provisional licensure and to be allowed into the Provisional Track program. Candidates in the regular Initial Licensure track have till their Internship to pass Praxis II.

IV. 2. 3. A brief analysis of the data findings: Transcript Analysis / Prerequisite Evaluation

Students are evaluated at admission through a transcript analysis on a variety of prerequisites and the information is graded by the following criterion which includes a score of 1 for Unacceptable if the candidate lacks 13 or more hours in fulfilling science courses and has a science GPA less than 2.75; 2 for Acceptable if the candidate lacks between 7 and 12 hours of science courses and has a science GPA between 2.75 and 3.0 and 3 for Exceeds Expectations if the candidate lacks 0 to 6 hours of science courses and has a science GPA of 3.0 or above. All students received an acceptable for admission.

All candidates have a BS in science with a strong core in science as demonstrated through alignment with NSTA Science Content Analysis. The Mean of the overall GPA is 3.33 and the science GPA is 3.4. The biggest prerequisite requirement for candidates is in earth science. All candidates are required to take six graduate hours in science content depending upon transcript analysis. Suggested graduate courses include History of Science, Multicultural Science, Science Technology and Science at the secondary level.

IV. 2. 4. An interpretation of how that data provides evidence for meeting standards

Since our program allows candidates to receive initial licensure at the graduate level it is important to have rigorous admission criteria to insure science teacher education candidates of quality. Because of the shortage in science teachers, thirteen of the fourteen candidates entering the SCED Provisional Track Initial Licensure program have already passed Praxis II Life and Earth Content and are employed in the local school districts. The table below addresses the alignment of the prerequisite content to NSTA content recommendations.

NSTA Content Recommendations and Science Course Alignment

**Biology major content, Life/Earth Science Licensure
Competency Requirements for All Science Teachers**

Table I: Unifying Concepts

Core Competencies	Required Courses Addressing this Competency
1. Multiple ways we organize our perceptions of the world and how systems organize the studies and knowledge of science.	BIOL 1400 or 1401 BIOL 2401 BIOL 2402 BIOL 2403 BIOL 3303 CHEM 1400 and 1401 or CHEM 1402 and 1403 ERSC 1302/1102 ERSC 1303/1103
2. Nature of scientific evidence and the use of models for explanation.	BIOL 1400 or 1401 BIOL 3300 BIOL 3303 CHEM 1400 and 1401 or CHEM 1402 and 1403 ERSC 1302/1102 ERSC 1303/1103 IGSC 4401
3. Measurement as a way of knowing and organizing observations of constancy and change.	BIOL 1400 or 1401 ERSC 1302/1102 IGSC 4401
4. Evolution of natural systems and factors that result in evolution or equilibrium.	BIOL 1400 or 1401 BIOL 2403 BIOL 3300 BIOL 3303 CHEM 1400 and 1401 or CHEM 1402 and 1403 ERSC 1302/1102 IGSC 4401
5. Interrelationships of form, function, and behaviors in living and nonliving systems.	BIOL 1400 or 1401 BIOL 2401 BIOL 2402 BIOL 2403

	BIOL 3303 CHEM 1400 and 1401 or CHEM 1402 and 1403 ERSC 1303/1103 IGSC 4401
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Science Content Requirement Analysis Tables A, B, and C for Life/Earth Science Licensure with Biology major content area

Table A: Biology

Core Biology Competencies	Required Courses Addressing this Competency
1. Life processes in living systems including organization of matter and energy.	BIOL 1400 or 1401 BIOL 2401 BIOL 2402 BIOL 2403
2. Similarities and differences among animals, plants, fungi, microorganisms, and viruses	BIOL 1400 or 1401 BIOL 2401 BIOL 2402 BIOL 2403 BIOL 3300
3. Principles and practices of biological classification	BIOL 1400 or 1401 BIOL 2402 BIOL 2403 ERSC 1303/1103
4. Theory and principles of biological evolution	BIOL 1400 or 1401 BIOL 2403 BIOL 3300 BIOL 3303 ERSC 1303/1103
5. Ecological systems including the interrelationships and dependencies of organisms with each other and their environments.	BIOL 1400 or 1401 BIOL 3303 ERSC 1303/1103
6. Population dynamics and the impact of population on its environment.	BIOL 1400 or 1401 BIOL 3303/3103 ERSC 1303/1103
7. General concepts of genetics and heredity	BIOL 1400 OR 1401 BIOL 3300/3100 ERSC 1303/1103
8. Organizations and functions of cells and multi-cellular systems.	BIOL 1400 or 1401 BIOL 2401 BIOL 2402 BIOL 2403 ERSC 1303/110
9. Behavior of organisms and their relationships to social systems.	BIOL 2403 ERSC1303/1103
10. Regulation of biological systems including homeostatic mechanisms	BIOL 1400 or 1401 BIOL 2402 BIOL 2403
11. Fundamental processes of modeling and investigating in the biological sciences	BIOL 1400 or 1401BIOL 3300 BIOL 3303/3103 ERSC 1303/1103
12. Applications of biology in environmental quality and in personal and community health	BIOL 1400 or 1401 BIOL 2401 BIOL 3300

	BIOL 3303
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Table B: Biology

Advanced Biology Competencies	Required Courses Addressing this Competency
13. Bioenergetics including major biochemical pathways	BIOL 2401 BIOL 3300/3100
14. Biochemical interactions of organisms and their environments	BIOL 1400 or 1401 BIOL 2401 BIOL 3300 BIOL 3103 BIOL 3303
15. Molecular genetics and heredity and mechanisms of genetic modification	BIOL 1400 or 1401 BIOL 3300 ERSC 1303/1103
16. Molecular basis for evolutionary theory and classification	BIOL 1400 or 1401 BIOL 3300 ERSC 1303/1103
17. Causes, characteristics, and avoidance of viral, bacterial, and parasitic diseases	BIOL 2401 BIOL 2403
18. Issues related to living systems such as genetic modification, uses of biotechnology, cloning, and pollution from farming.	BIOL 1400 or 1401 BIOL 2401 BIOL 3300/3100 BIOL 3303/3103
19. Historical development and perspectives in biology including contributions of significant figures and underrepresented groups, and the evolution of theories in biology	BIOL 1400 or 1401 BIOL 3303
20. How to design, conduct, and report research in biology	BIOL 1400 or 1401 BIOL 3100 BIOL 3103 BIOL 4190
21. Applications of biology and biotechnology in society, business, industry, and health fields	BIOL 1400 or 1401

Table C: Earth/Space Science

Core Earth/Space Science Competencies	Required Courses Addressing this Competency
1. Characteristics of land, atmosphere, and ocean systems on Earth	ERSC 1302/1102 ERSC 1303/1103
2. Properties, measurement, and classification of Earth materials	ERSC 1302/1102
3. Changes in the Earth including land formation and erosion	ERSC 1302/1102 ERSC 1303/1103
4. Geochemical cycles including biotic and abiotic systems	BIOL 3303/3103
5. Energy flow and transformation in Earth systems	BIOL 3303/3103
6. Hydrological features of the Earth	ERSC 1302/1102
7. Patterns and changes in the atmosphere, weather, and climate	BIOL 3303 ERSC 1303/1103
8. Origin, evolution, and planetary behaviors of Earth	ERSC 1302/1303
9. Origin, evolution, and properties of the universe	ERSC 1302
10. Fundamental processes of investigating in the Earth and space sciences	ERSC 1302/1102 ERSC 1303/1103
11. Sources and limits of natural resources	ERSC 1302/1102
12. Applications of Earth and space sciences to environmental quality and to personal and community health and welfare.	

Earth Science major content, Life/Earth Science Licensure

Competency Requirements for All Science Teachers

Table I: Unifying Concepts

Core Competencies	Required Courses Addressing this Competency
1. Multiple ways we organize our perceptions of the world and how systems organize the studies and knowledge of science.	ERSC 1302/1102 ERSC 1303/1103 BIOL 1400 or 1401 CHEM 1402 and 1403
2. Nature of scientific evidence and the use of models for explanation.	ERSC 1302/1102 ERSC 1303/1103 ERSC 3310 ERSC 3430 ERSC 3450 BIOL 1400 or 1401 CHEM 1402 and 1403
3. Measurement as a way of knowing and organizing observations of constancy and change.	ERSC 1302/1102 ERSC 3320 ERSC 3430 ERSC 3450 IGSC 4401 CHEM 1402 and 1403 BIOL 1400 or 1401
4. Evolution of natural systems and factors that result in evolution or equilibrium.	ERSC 1302/1102 CHEM 1402, 1403 BIOL 1400 or 1401
5. Interrelationships of form, function, and behaviors in living and nonliving systems.	ERSC1303/1103 CHEM 1402 and 1403 BIOL 1400 or 1401

Science Content Requirement Analysis Tables A, B, and C for Life/Earth Science Licensure with Earth Science major content area

Table A. Earth/Space Science

Core Earth/Space Science Competencies	Required Courses Addressing this Competency
1.Characteristics of land, atmosphere and ocean systems on Earth	ERSC 1302/1102 ERSC 1303/1103 ERSC 3450
2. Properties, measurement, and classification of Earth materials	ERSC 1302/1102 ERSC 3310, 4411, 3450
3. Changes in the Earth including land formation and erosion	ERSC 1302/1102 ERSC 3450
4. Geochemical cycles including biotic and abiotic systems	ERSC 1303/1103 ERSC 3450
5. Energy flow and transformation in Earth systems	ERSC 1302/1102 ERSC 4411
6. Hydrological features of the Earth	ERSC 1302/1102 ERSC 3450
7.Patterns and changes in the atmosphere, weather, and climate	ERSC 1302/1102
8. Origin, evolution, and planetary behaviors of Earth	ERSC 1302/1102 ERSC 1303/1103
9. Origin, evolution, and properties of the universe	ERSC 1302/1102 ERSC 1303/1103
10. Fundamental processes of investigating in the Earth	ERSC 1302/1102

and space sciences	ERSC 1303/1103
11. Sources and limits of natural resources	ERSC 1302/1102 ERSC 4411, 3450
12. Applications to environmental quality and to personal and community health and welfare	

Table B. Earth/Space Science

Advanced Earth/Space Science Competencies	Required Courses Addressing this Competency
13. Gradual and catastrophic changes in the Earth	ERSC 1302/1102 ERSC 1303/1103 ERSC 3430
14. Oceans & relationship to atmosphere and climate	ERSC 1302/1102
15. Hydrological cycles and problems of distribution and use of water	ERSC 1302/1102 ESC 3450
16. Dating of the Earth and other objects in the universe	ERSC 1302/1102 ERSC 1303/1103
17. Energy-matter structures and functions in the universe	
18. Changes in the Earth and the evolution and distribution of living things	ERSC 1302/1102 ERSC 1303/1103
19. Issues such as global climate change, mine subsidence, and channeling of waterways	ERSC 1302/1102
20. Historical development and perspectives, including contributions of significant figures and underrepresented groups, and the evolution of theories in the Earth and space sciences.	
21. How to design, conduct, and report research in the Earth and space sciences	ERSC 4190 ERSC 3320
22. Applications in society, business, industry, and health fields	

Table C. Biology

Core Biology Competencies	Required Courses or advising requirements
22. Life processes in living systems including organization of matter and energy.	BIOL 1400 or 1401 BIOL 2401 BIOL 2402 BIOL 2403
23. Similarities and differences among animals, plants, fungi, microorganisms, and viruses	BIOL 1400 or 1401 BIOL 2401, BIOL 2402 BIOL 2403, BIOL 3300
24. Principles and practices of biological classification	BIOL 1400 or 1401 BIOL 2402 BIOL 2403 ERSC 1303/1103
25. Theory and principles of biological evolution	BIOL 1400 or 1401 BIOL 2403 BIOL 3300 BIOL 3303 ERSC 1303/1103
26. Ecological systems including the interrelationships and dependencies of organisms with each other and their	BIOL 1400 or 1401 BIOL 3303

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environments.	ERSC 1303/1103
27. Population dynamics and the impact of population on its environment.	BIOL 1400 or 1401 BIOL 3303/3103 ERSC 1303/1103
28. General concepts of genetics and heredity	BIOL 1400 OR 1401 BIOL 3300/3100 ERSC 1303/1103
29. Organizations and functions of cells and multi-cellular systems.	BIOL 1400 or 1401 BIOL 2401, BIOL 2402 BIOL 2403 ERSC 1303/110
30. Behavior of organisms and their relationships to social systems.	BIOL 2403 ERSC1303/1103
31. Regulation of biological systems including homeostatic mechanisms	BIOL 1400 or 1401 BIOL 2402 BIOL 2403
32. Fundamental processes of modeling and investigating in the biological sciences	BIOL 1400 or 1401BIOL 3300 BIOL 3303/3103 ERSC 1303/1103
33. Applications of biology in environmental quality and in personal and community health	BIOL 1400 or 1401 BIOL 2401 BIOL 3300 BIOL 3303

Chemistry major content, Physical/Earth Science Licensure

Competency Requirements for All Science Teachers

Table I. Unifying Concepts

Core Competencies	Required Courses Addressing this Competency
1. Multiple ways we organize our perceptions of the world and how systems organize the studies and knowledge of science.	CHEM 1402 and CHEM 1403 CHEM 3340 CHEM 3350 and CHEM 3351 ERSC 1302/1102 or 1303/1103 PHYS 1321 1322
2. Nature of scientific evidence and the use of models for explanation.	CHEM 1402 and CHEM 1403 CHEM 3350 and CHEM 3351
3. Measurement as a way of knowing and organizing observations of constancy and change.	CHEM 1402 and CHEM 1403 CHEM 2310 and CHEM 2311 CHEM 3572 ERSC 3320 IGSC 4401
4. Evolution of natural systems and factors that result in evolution or equilibrium.	CHEM 1403 CHEM 2310 and CHEM 2311 CHEM 3340 CHEM 3572 ERSC 1302/1102 or 1303/1103 IGSC 4401
5. Interrelationships of form, function, and behaviors in living and nonliving systems.	CHEM 1402 and CHEM 1403 CHEM 3350 and CHEM 3351 CHEM 3572 IGSC 4401

Science Content Requirement Analysis Tables A, B, C, and D for Physical/Earth Science Licensure with Chemistry major content area

Table A. Chemistry

Core Chemistry Competencies	Required Courses Addressing this Competency
1. Fundamental structures of atoms and molecules	CHEM 1402 CHEM 3572 ERSC 3310
2. Basic principles of ionic, covalent, and metallic bonding	CHEM 1402 CHEM 3340 CHEM 3572 ERSC 3310
3. Physical and chemical properties and classification of elements including periodicity	CHEM 1402 CHEM 3340 ERSC 3310
4. Chemical kinetics and thermodynamics	CHEM 1403 CHEM 3572
5. Principles of electrochemistry	CHEM 1403 CHEM 2311
6. Mole concept, stoichiometry, and laws of composition	CHEM 1402 CHEM 2310
7. Transition elements and coordination compounds	CHEM 1403 CHEM 3340
8. Acids and bases, oxidation-reduction chemistry, and solutions	CHEM 1402 1403 CHEM 2310 and CHEM 2311
9. Fundamental biochemistry	CHEM 3351 CHEM 3572
10. Functional and polyfunctional group chemistry	CHEM 3350 and CHEM 3351
11. Environmental and atmospheric chemistry	
12. Fundamental processes of investigating in chemistry	CHEM 4190
13. Applications of chemistry in personal and community health and environmental quality	

Table B. Chemistry

Advanced Chemistry Competencies	Required Courses Addressing this Competency
14. Molecular orbital theory, aromaticity, metallic and ionic structures, and correlation to properties of matter	CHEM 1402 CHEM 3340 CHEM 3350
15. Superconductors and principles of metallurgy	CHEM 3340
16. Advanced concepts of chemical kinetics, and thermodynamics	CHEM 3572
17. Lewis adducts and coordination compounds	CHEM 1403 CHEM 2310 CHEM 3340
18. Solutions, colloids, and colligative properties	CHEM 1402 and 1403 CHEM 3572
19. Major biological compounds and natural products	CHEM 3351 CHEM 3572
20. Solvent system concepts including non-aqueous solvents	CHEM 1403 CHEM 2310
21. Chemical reactivity and molecular structure including electronic and steric effects	CHEM 1403 CHEM 3350 and 3351
22. Organic synthesis and organic reaction mechanisms	CHEM 3350 and 3351
23. Energy flow through chemical systems	CHEM 1403 CHEM 3340 CHEM 3572

24. Issues including such things as ground water pollution, disposal of plastics, and development of alternative fuels	
25. Historical development and perspectives in chemistry including contributions of significant figures and underrepresented groups, and the evolution of theories in chemistry	CHEM 1402 CHEM 3340
26. How to design, conduct, and report research in chemistry	CHEM 4190
27. Applications of chemistry and chemical technology in society, business, industry, and health fields	CHEM 1402

Table C. Earth/Space Science

Core Earth/Space Science Competencies	Required Courses Addressing this Competency
1.Characteristics of land, atmosphere and ocean systems on Earth	ERSC 1302/1102 or ERSC 1303/1103
2. Properties, measurement, and classification of Earth materials	ERSC 1302/1102 XXXX this is not required XXXX
3. Changes in the Earth including land formation and erosion	ERSC 1302/1102 XXXX this is not required XXXX
4. Geochemical cycles including biotic and abiotic systems	ERSC 1303/1103 XXXX this is not required XXXX
5. Energy flow and transformation in Earth systems	ERSC 1302/1102 XXXX this is not required XXXX
6. Hydrological features of the Earth	ERSC 1302/1102 XXXX this is not required XXXX
7.Patterns and changes in the atmosphere, weather, and climate	ERSC 1302/1102 XXXX this is not required XXXX
8. Origin, evolution, and planetary behaviors of Earth	ERSC 1302/1102 or ERSC 1303/1103
9. Origin, evolution, and properties of the universe	ERSC 1302/1102 or ERSC 1303/1103
10. Fundamental processes of investigating in the Earth and space sciences	ERSC 1302/1102 or ERSC 1303/1103
11. Sources and limits of natural resources	ERSC 1302/1102 XXXX this is not required XXXX
12. Applications to environmental quality and to personal and community health and welfare	

Table D. Physics

Core Physics Competencies	Required Courses Addressing this Competency
1. Energy, work, and power	PHYS 1321/1121 PHYS 1322/1122
2. Motion, major forces, and momentum	PHYS 1321/1121 PHYS 1322/1122
3. Newtonian physics w/engineering applications	PHYS 1321/1121
4. Conservation mass, momentum, energy, and charge	PHYS 1321/1121 PHYS 1322/1122
5. Physical properties of matter	PHYS 1321/1121 PHYS 1322/1122 CHEM 1402
6. Kinetic-molecular motion and atomic models	PHYS 1321/1121 PHYS 1322/1122 CHEM 1402
7. Radioactivity, nuclear reactors, fission, and fusion	PHYS 1322/1122

	CHEM 1402
8. Wave theory, sound, light, the electromagnetic spectrum and optics	PHYS 1321/1121 PHYS 1322/1122
9. Electricity and magnetism	PHYS 1322/1122
10. Fundamental processes of investigating in physics	IGSC 4401
11. Applications of physics in environmental quality and to personal and community health	

B.4 Physics major content, Physical/Earth Science Licensure

Competency Requirements for All Science Teachers

Table I: Unifying Concepts

Core Competencies	Required Courses Addressing this Competency
1. Multiple ways we organize our perceptions of the world and how systems organize the studies and knowledge of science.	PHYS 2321/2121, 2322/2122, 3323/3123 PHYS 4399 ASTR 1301/1101 ERSC 1302/1102 ERSC 1303/1103 CHEM 1402 and 1403
2. Nature of scientific evidence and the use of models for explanation.	PHYS 2321/2121, 2322/2122, 3323/3123 PHYS 4111 and 4399 ASTR 1301/1101 ERSC 1302/1102 ERSC 1303/1103 ERSC 4411, 3430, 3450 CHEM 1402 and 1403
3. Measurement as a way of knowing and organizing observations of constancy and change.	PHYS 2321/2121, 2322/2122, 3323/3123 PHYS 4111 and 4399 ASTR 1301/1101 ERSC 1302/1102 ERSC 3320, 3430, 3450 IGSC 4401, CHEM 1402, 1403
4. Evolution of natural systems and factors that result in evolution or equilibrium.	PHYS 2321/2121, 2322/2122, 3323/3123 PHYS 4399 ASTR 1301/1101 ERSC 1302/1102
5. Interrelationships of form, function, and behaviors in living and nonliving systems.	PHYS 2321/2121, 2322/2122, 3323/3123 PHYS 4399 ASTR 1301/1101 ERSC1303/1103

Science Content Requirement Analysis Tables A, B, C, and D for Physical/Earth Science Licensure with Physics major content area

Table A. Physics

Core Physics Competencies	Required Courses Addressing this Competency
1. Energy, work, and power	PHYS 2321/2121 PHYS 2322/2122
2. Motion, major forces, and momentum	PHYS 2321/2121 PHYS 2322/2122
3. Newtonian physics w/engineering applications	PHYS 2321/2121
4. Conservation mass, momentum, energy, and charge	PHYS 2321/2121

	PHYS 2322/2122
5. Physical properties of matter	PHYS 2321/2121 PHYS 2322/2122 PHYS 3323/3123 CHEM 1402
6. Kinetic-molecular motion and atomic models	PHYS 2321/2121 PHYS 2322/2122 PHYS 3323/3123 ASTR 1301/1101 CHEM 1402
7. Radioactivity, nuclear reactors, fission, and fusion	PHYS 2322/2122 PHYS 3323/3123 ASTR 1301/1101 CHEM 1402
8. Wave theory, sound, light, the electromagnetic spectrum and optics	PHYS 2321/2121 PHYS 2322/2122 PHYS 3323/3123 ASTR 1301/1101
9. Electricity and magnetism	PHYS 2322/2122 PHYS 3323/3123
10. Fundamental processes of investigating in physics	PHYS 4111 PHYS 4399 PHYS 4190 IGSC 4401
11. Applications of physics in environmental quality and to personal and community health	

Table B. Physics

Advanced Physics Competencies	Required Courses Addressing this Competency
12. Thermodynamics and energy-matter relationships	PHYS 2321/2121 PHYS 2322/2122 PHYS 3323/3123
13. Nuclear physics including matter-energy duality and reactivity	PHYS 2322/2122 PHYS 3323/3123
14. Angular rotation and momentum, centripetal forces, and vector analysis	PHYS 2321/2121
15. Quantum mechanics, space-time relationships, and special relativity	PHYS 2322/2122 PHYS 3323/3123
16. Models of nuclear and subatomic structures and behavior	PHYS 2322/2122 PHYS 3323/3123 CHEM 1402
17. Light behavior, including wave-particle duality and models	PHYS 2322/2122 PHYS 3323/3123 CHEM 1402
18. Electrical phenomena including electric fields, vector analysis, energy, potential, capacitance, and inductance	PHYS 2322/2122
19. Issues related to physics such as disposal of nuclear waste, light pollution, shielding communication systems and weapons development	PHYS 2321/2121 PHYS 2322/2122 PHYS 3323/3123
20. Historical development and cosmological perspectives in physics including contributions of significant figures and underrepresented groups, and evolution of theories in physics	ASTR 1301
21. How to design, conduct, and report research in physics	PHYS 4111 PHYS 4399

	PHYS 4190 IGSC 4401
22. Applications of physics and engineering in society, business, industry, and health fields	

Table C. Chemistry

Core Chemistry Competencies	Required Courses Addressing this Competency
1. Fundamental structures of atoms and molecules	CHEM 1402
2. Basic principles of ionic, covalent, and metallic bonding	CHEM 1402
3. Physical and chemical properties and classification of elements including periodicity	CHEM 1402
4. Chemical kinetics and thermodynamics	CHEM 1403
5. Principles of electrochemistry	CHEM 1403
6. Mole concept, stoichiometry, and laws of composition	CHEM 1402 CHEM 2310
7. Transition elements and coordination compounds	CHEM 1403
8. Acids and bases, oxidation-reduction chemistry, and solutions	CHEM 1402 CHEM 1403 CHEM 2310 CHEM 2311
9. Fundamental biochemistry	CHEM 3351/3151 XXXX not required XXXX
10. Functional and polyfunctional group chemistry	CHEM 3350/3150 CHEM 3351/3151 XXXX neither are required XXXX
11. Environmental and atmospheric chemistry	
12. Fundamental processes of investigating in chemistry	IGSC 4401
13. Applications of chemistry in personal and community health and environmental quality	

Table D. Earth/Space Science

Core Earth/Space Science Competencies	Required Courses Addressing this Competency
1. Characteristics of land, atmosphere and ocean systems on Earth	ERSC 1302/1102 ERSC 1303/1103
2. Properties, measurement, and classification of Earth materials	ERSC 1302/1102
3. Changes in the Earth including land formation and erosion	ERSC 1302/1102
4. Geochemical cycles including biotic and abiotic systems	ERSC 1303/1103
5. Energy flow and transformation in Earth systems	ERSC 1302/1102
6. Hydrological features of the Earth	ERSC 1302/1102
7. Patterns and changes in the atmosphere, weather, and climate	ERSC 1302/1102
8. Origin, evolution, and planetary behaviors of Earth	ERSC 1302/1102 ERSC 1303/1103
9. Origin, evolution, and properties of the universe	ERSC 1302/1102 ERSC 1303/1103
10. Fundamental processes of investigating in the Earth	ERSC 1302/1102

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and space sciences	ERSC 1303/1103
11. Sources and limits of natural resources	ERSC 1302/1102
12. Applications to environmental quality and to personal and community health and welfare	

**IV. 2.5. Attachment of assessment documentation,
(a) the assessment tool or description of the assignment;**

Secondary Science (Life/Earth) 36 hours minimum					
Name:		University:		Degree: Hours:	
Overall GPA:		Science GPA:		Year Graduated:	
Prerequisite courses needed:					
*Passing Praxis II Content in Life or Earth may substitute for course work.					
Requirements	Hrs.	UALR Course (or Equivalent Competency) Number and Title	College or University	Year	Grade
Biology 20-26hrs		Competency Requirements for all Science Teachers			
		Core (2 from table A)			
		Advanced competencies (2 from table B Bio)			
Earth Science 12 hrs		Core (2 from table A)			
		Advanced competencies (2 from table B Earth Sci.)			
Physical Science 8 hrs (Chem or Phys)		Supporting competencies (2 from Phys & Chem)			
Praxis II Scores					
Life Content	#235				
Earth Content	#571				
Life Pedagogy	#234				
Advisor: Dr. Cheryl Grable		Date:			
Associate Dean: Dr. Bruce Smith		Date:			

Secondary Science (Physical/Earth) 36 hours minimum					
Name:		University:		Degree: Hours:	
Overall GPA:		Science GPA:		Year Graduated:	
Prerequisite courses needed:					
*Passing Praxis II Content in Physical or Earth may substitute for course work.					

Requirements	Hrs	UALR Course (or Equivalent Competency) Number and Title	College or University	Year	Grade
Physics or Chemistry 24 hrs		Competency Requirements for all Science Teachers			
		Core (2 from table A in Phys or Chem)			
		Advanced competencies (2 from table B Phys or Chem)			
Earth Sci. 12 hrs		Core (2 from table A)			
		Advanced competencies (2 from table B Earth Sci.)			
Biology 8-12 hrs		Supporting competencies (2 from biology)			
Praxis II Scores					
Physical Content					
Earth Content					
Physical Pedagogy					
Advisor: Dr. Cheryl Grable		Date:			
Associate Dean: Dr. Bruce Smith		Date:			

**IV. 2.5. Attachment of assessment documentation
(b) the scoring guide for the assessment**

NSTA Course Content Grid

The NSTA Course Content Grid addresses Standards 1-4, 7, and 9. Knowing science includes understanding a variety of science content in order to prepare a teacher equally in two teaching disciplines, usually with less than a major in each. To meet Arkansas Licensure Standards which is a dual field program, Candidates must choose Life-Earth or Physical-Earth for an area of licensure.	
Level 1 Unacceptable	Candidate lacks 13 or more prerequisite science content in their area of licensure or has a GPA less than 2.5
Level 2 Acceptable	Candidate lacks between 7 & 12 prerequisite science content hours in their area of licensure and has a GPA between 2.75 and 3.0 in science content.
Level 3 Target	Candidate lacks between 0 & 6 prerequisite science content hours in their area of licensure and has a GPA of 3.0 or above in science content.

IV.2.5 Attachment of assessment documentation: Candidate data derived from the assessment.

Candidate Prerequisite Assessment for Admission to Program

Candidates (n=12)	2010-2011 N=12
BA Science (Phys, Chem, Bio, ES)	12
BS Science (Phys, Chem, Bio, ES)	
Hours	M=150
Overall GPA	M=3.30
Science GPA	M=3.49
Hours in science	M=50
Prerequisite Courses Needed	M=0
Praxis II Life: Content	M=156
Praxis II Earth: Content	M=170
Praxis II Physical: Content	M=189
Praxis II Life: Pedagogy	M=148
Praxis II Physical: Pedagogy	M=160
Provisional Initial Track	2
Regular Initial Track	0

IV.3.1. A description of the assessment and its use in the program.

A comprehensive Ability to Plan rubric, the NSTA Ability to plan rubric, is used to assess the candidates' ability to effectively plan classroom-based instruction. NSTA 1-3 which demonstrate candidate understanding of content are expected to be used. But the main focus is the development of a Unit with lesson plans that are based on Arkansas State Frameworks which are based on NSES Standards and demonstrate NSTA Standards 6, 8 & 9. This rubric has eight criteria that is valued on a 4 point scale with 1 representing unacceptable, 2 acceptable, 3 exceeds expectations and 4 excellent. Students are required to provide evidence of their ability to plan to the NSTA standards from the following course in the program: SCED 7201 Curriculum Design where students develop a unit to be used in their Internship. The unit demonstrates the candidate's ability to plan and implement through instruction the NSTA standards.

IV.3. 2. A description of how the assessment specifically aligns with the standards it is cited for in Section III.

The NSTA Ability to Plan rubric has eight criteria that is valued on a 4 point scale with 1 representing unacceptable, 2 acceptable, 3 exceeds expectations and 4 excellent. This rubric is used to assess the candidate's ability to plan for experiences that provide content and instruction based on NSTA and NSES standards.

IV.3.3. A brief analysis of the data findings.

The data analyses are represented in the following charts which show the analysis of the NSTA Science Ability to Plan Unit and lessons by years and by NSTA Standards.

Assessment for NSTA Unit by Candidates (Value = 1-4)

	2010-2011 n=5	2011-2012 n=5
Mean of Candidates	3.17	3.25

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Assessment for NSTA Unit by Standards (Value = 1-4) N=5 Mean
2011-2012

AR Teacher Licensure Standards & NSTA # 9 Safety	
Major Concepts	3.5
Multicultural Perspective	3.11
Lesson Plans	3.5
Assessment	3.0
NSTA Safety Standard (a) New Assessment* (4)	3.5
NSTA Safety Standard (b) New Assessment* (4)	3.5
NSTA Safety Standard (c) New Assessment* (4)	3.5
NSTA Safety Standard (d) New Assessment* (4)	3.5

IV.3.4 An interpretation of how that data provides evidence for meeting standards.

The data from the NSTA Ability to Plan Rubric reflects that candidates are meeting NSTA standard. The mean of the standards ranged 3.0 to 4.0 which is satisfactory to good on all of the Standards including NSTA Safety Standard 9.

IV.3.5. Attachment of assessment documentation, including:

- (a) the assessment tool or description of the assignment; and**
- (b) the scoring guide for the assessment. The following is the grading rubric used to assess and score the Unit developed by science candidates to demonstrate knowledge of NSTA Standards 6.1-8.9:**

NSTA Unit Plan

NSTA Unit Plan

The Unit Plan is based on the following Arkansas Teacher Licensure Objectives and NSTA Safety Standards. 1.1.1 The teacher knows how to apply major concepts, assumptions, debates, processes of inquiry, and ways of knowing that are central to the discipline(s) he/she teaches. 1.1.2 The teacher has a multicultural perspective of his/her discipline (s). 1.1.4 The teacher understands how students conceptual frameworks and their misconceptions of an area of knowledge can influence their learning. 1.2.3 The teacher accepts multiple perspectives. 1.3.3 The teacher effectively uses multiple representations and explanations of disciplinary concepts that capture key ideas and links them to student’s prior understandings. 1.3.4 The teacher represents and uses a variety of viewpoints, theories, ways of knowing, methods of inquiry, and standards, and standards of evidence characteristic of the discipline. 1.3.6 The teacher includes multicultural perspectives in his/her lessons and conveys to learners how knowledge is developed from the vantage point of the culture. 2.1.1 The teacher understands principles of curriculum design and knows how to plan lessons, units and courses of study. (Cooperative learning) 2.3.1 The teacher plans lessons, units, and courses of study that are appropriate to the students, to the content, and to single discipline or interdisciplinary course objectives. (Cooperative learning) 2.3.2 The teacher adapts the curricula to accommodate individual student abilities and needs. (Cooperative learning) 2.3.3 The teacher evaluates and utilizes teaching resources and curriculum materials for comprehensiveness, accuracy, and usefulness. 2.3.9 The teacher constructs and uses a variety of assessment techniques to assess student growth and development. (Cooperative learning) The unit meets NSTA Safety Standard # 9: 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: 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.

Criterion 1

Major Concepts

1.1.1 The teacher knows how to apply major concepts, assumptions, debates, processes of inquiry, and ways of knowing that are central to the discipline(s) he/she teaches. 2.1.1 The teacher understands principles of curriculum design and knows how to plan lessons, units and courses of study. (Cooperative learning) 2.3.1 The teacher plans lessons, units, and courses of study that are appropriate to the students, to the content, and to single discipline or interdisciplinary course objectives. (Cooperative learning) The unit provides a rationale containing an argument convincing to students, parents and community about the value of the unit, stating clear goals for student learning based on district curriculum guide and/or state

	frameworks.
Level 1 Unacceptable Score:1.0	Rationale lacks clear goal for student learning with a foundation based on national or state frameworks.
Level 2 Acceptable Score:2.0	Rationale states clear goal for student learning based on district curriculum guide and/or state frameworks. Rationale also includes good reasons for use of cooperative learning, thematic instruction, problem-based learning and use of technology.
Level 3 Exceeds Expectations Score:3.0	Rationale meets level 2 criteria and makes an argument convincing to students, parents and community about the value of the unit.
Level 4 Excellent Score 4.0	Rationale meets level 2 & 3 criteria and makes strong argument convincing to students, parents and community about the value of the unit.
Criterion 2 Multicultural Perspective	1.1.2 The teacher has a multicultural perspective of his/her discipline (s). 1.1.4 The teacher understands how students conceptual frameworks and their misconceptions of an area of knowledge can influence their learning. 2.3.2 The teacher adapts the curricula to accommodate individual student abilities and needs. (Cooperative learning) The unit includes a task analysis including the concepts, skills, vocabulary, factual information or other objectives to be learned in the unit and an analysis of what students already know. The unit includes a plan to scaffold any skills or tasks needed for all students, including those with special, language or cultural needs so they will be able to attain the objectives to be learned.
Level 1 Unacceptable Score:1.0	No task analysis of what skills students have and what students already know.
Level 2 Acceptable Score:2.0	The unit includes a task analysis including the concepts, skills, vocabulary, factual information or other objectives to be learned in the unit and an analysis of what students already know.
Level 3 Exceeds Expectations Score:3.0	The unit includes a plan to scaffold any skills or tasks needed for all students, including those with special, language or cultural needs so they will be able to attain the objectives to be learned.
Level 4 Excellent Score 4.0	The unit not only includes a plan to scaffold any skills or tasks needed for all students, including those with special, language or cultural needs so they will be able to attain the objectives, but utilizes cultural differences to obtain objectives.
Criterion 3 Lesson Plans	1.2.3 The teacher accepts multiple perspectives. 1.3.3 The teacher effectively uses multiple representations and explanations of disciplinary concepts that capture key ideas and links them to students' prior understandings. 1.3.4 The teacher represents and uses a variety of viewpoints, theories, ways of knowing, methods of inquiry, and standards, and standards of evidence characteristic of the discipline. 1.3.6 The teacher includes multicultural perspectives in his/her lessons and conveys to learners how knowledge is developed from the vantage point of the culture. The lessons contain objectives clearly stated as outcomes for student learning based upon appropriate level of difficulty and align with state

	frameworks.
Level 1 Unacceptable Score:1.0	Incomplete lesson due to: objectives are not clearly stated, objectives do not align with frameworks, lack instruction or materials, or lessons are not at the appropriate level of complexity.
Level 2 Acceptable Score:2.0	Detailed lesson plans including all instructions and materials based on frameworks and at the appropriate level of difficulty.
Level 3 Exceeds Expectations Score:3.0	Lesson plans indicate constructivist approach to incorporating multicultural and diverse learning styles and demonstrate at least 20% higher order thinking skills.
Level 4 Excellent Score 4.0	Lesson plans indicate constructivist approach to incorporating multicultural and diverse learning styles and demonstrate at least 50% higher order thinking skills.
Criterion 4 Assessment	2.3.3 The teacher evaluates and utilizes teaching resources and curriculum materials for comprehensiveness, accuracy, and usefulness. 2.3.9 The teacher constructs and uses a variety of assessment techniques to assess student growth and development. (Cooperative learning) The unit contains an evaluation procedure to check student learning through both traditional and nontraditional assessments with continual feedback to the student.
Level 1 Unacceptable Score:1.0	The unit has minimal or no evaluation plan to assess individual or group learning.
Level 2 Acceptable Score:2.0	The unit has an evaluation procedure to check individual and/or group student learning using traditional and non-traditional assessments.
Level 3 Exceeds Expectations Score:3.0	The unit assessments allow for continual feedback to the student and a chance for student reflection.
Level 4 Excellent Score 4.0	The unit assessments incorporates a plan to use the assessment for future learning.
Criterion 5 NSTA Safety Standards (a)	The unit meets NSTA Safety Standard # 9: 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: 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.
Level 1 Unacceptable Score:1.0	The unit demonstrates minimal or no competencies of some guidelines regarding law and ethics, student safety and animal care, and maintenance of disposal of materials
Level 2 Acceptable Score:2.0	The unit demonstrates an understanding of some guidelines regarding law and ethics, student safety and animal care, and maintenance of disposal of materials.
Level 3 Exceeds	The unit demonstrates knowledge and an understanding of guidelines

Expectations Score:3.0	regarding law and ethics, student safety and animal care, and maintenance of disposal of materials.
Level 4 Excellent Score: 4.0	The unit demonstrates knowledge and an understanding as well as application of guidelines regarding law and ethics, student safety and animal care, and maintenance of disposal of materials.
Criterion 6 NSTA Safety Standards (b)	The unit meets NSTA Safety Standard # 9: 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: b. Know and practice safe and proper techniques for the preparation, storage, dispensing, supervision, and disposal of all materials used in science instruction.
Level 1 Unacceptable Score:1.0	The Unit does not demonstrate a knowledge and practice of safe and proper techniques for the preparation, storage, dispensing, supervision, and disposal of all materials used in science instruction.
Level 2 Acceptable Score:2.0	The Unit demonstrates some knowledge of safe and proper techniques for the preparation, storage, dispensing, supervision, and disposal of all materials used in science instruction.
Level 3 Exceeds Expectations Score:3.0	The Unit demonstrates a knowledge and understanding of safe and proper techniques for the preparation, storage, dispensing, supervision, and disposal of all materials used in science instruction.
Level 4 Excellent Score: 4.0	The Unit demonstrates a knowledge, understanding and application of safe and proper techniques for the preparation, storage, dispensing, supervision, and disposal of all materials used in science instruction.
Criterion 7 NSTA Safety Standards (c)	The unit meets NSTA Safety Standard # 9: 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: c. Know and follow emergency procedures, maintain safety equipment, and ensure safety procedures appropriate for the activities and the abilities of students.
Level 1 Unacceptable Score:1.0	The Unit does not demonstrate knowledge of emergency procedures, maintain safety equipment, and ensure safety procedures appropriate for the activities and the abilities of students.
Level 2 Acceptable Score:2.0	The Unit demonstrates some knowledge of emergency procedures, maintain safety equipment, and ensure safety procedures appropriate for the activities and the abilities of students.
Level 3 Exceeds Expectations Score:3.0	The Unit demonstrates knowledge of how to follow emergency procedures, maintain safety equipment, and ensure safety procedures appropriate for the activities and the abilities of students.
Level 4 Excellent Score: 4.0	The Unit demonstrates knowledge of and follows emergency procedures, maintain safety equipment, and ensure safety procedures appropriate for the activities and the abilities of students.

Criterion 8 NSTA Safety Standards (d)	The unit meets NSTA Safety Standard # 9: 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: 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.
Level 1 Unacceptable Score:1.0	The Unit does not demonstrate all living organisms used in the classroom or found in the field be treated in a safe, humane, and ethical manner and respect legal restrictions on their collection, keeping, and use, for the activities and the abilities of students.
Level 2 Acceptable Score:2.0	The Unit demonstrates some knowledge that all living organisms used in the classroom or found in the field be treated in a safe, humane, and ethical manner and respect legal restrictions on their collection, keeping, and use, for the activities and the abilities of students.
Level 3 Exceeds Expectations Score:3.0	The Unit demonstrates knowledge that all living organisms used in the classroom or found in the field be treated in a safe, humane, and ethical manner and respect legal restrictions on their collection, keeping, and use, for the activities and the abilities of students.
Level 4 Excellent Score: 4.0	The Unit demonstrates knowledge and understanding as well as application that all living organisms used in the classroom or found in the field be treated in a safe, humane, and ethical manner and respect legal restrictions on their collection, keeping, and use, for the activities and the abilities of students.

IV.3.5. Attachment of assessment documentation, including:

c) Candidate data derived from the assessment. The following chart shows the three candidates assessment of NSTA Standards 6.1-8.9. The scores are: Level 4 Excellent, Level 3 Good, Level 2 Satisfactory and Level 1 Unacceptable. The mean has been calculated for the candidate's score and for the 6.1-8.9 NSTA Standards.

Assessment for NSTA Cooperative Learning, Thematic, PBL, Technology Unit

Candidate (n=3)	2010-2011 N=5	2011-2012 N=5	Mean of Standards
AR Teacher Licensure Standards and NSTA # 9 Safety	Mean of Candidates		
Major Concepts	3.5	3.5	3.5
Multicultural Perspective	3.0	3.0	3.0
Lesson Plans	3.5	3.5	3.5
Assessment	2.89	3.0	2.94
NSTA Safety Standard (a)	3.5	3.5	3.5
NSTA Safety Standard (b)	3.5	3.5	3.5
NSTA Safety Standard (c)	3.5	3.5	3.5
NSTA Safety Standard (d)	3.5	3.5	3.5
Mean of Candidates	3.36	3.375	3.37

IV.4.1. A brief description of the assessment and its use in the program.

A comprehensive NSTA Observation form is used to assess the candidates' ability to effectively teach classroom-based instruction for each of the NSTA Standards.

IV.4.2. A description of how this assessment specifically aligns with the standards it is cited for in Section III.

The NSTA rubric has 8 criteria. Each standard is assessed through Exceeds Expectations 3, Meets Expectations 2, and Needs Improvement 1. Candidates are required to provide evidence from field experiences (SCED 7106 and 7601) assessments that reflect their ability to teach the NSTA Standards. A Candidate who scores a one on six or more standards will be required to take science courses in the areas of deficiency and may be required to repeat the field placement.

IV.4.3. A brief analysis of the data findings.

The data for the NSTA Observation Guide rubric indicates candidates have a mean score between 2.29 and 2.71 on the SCED 7106 observation on the NSTA standards, and a mean score between 2.45 and 3.0 on the SCED 7601 observation. The value was between 1 and 3. The data demonstrate UALR teacher education candidates are well prepared to integrate the NSTA standards into their teaching.

**NSTA Pre-pro Observation Guide
SCED 7106 (V=1-3)**

Candidate (n=2)	Mean of Candidates
2009-2010 (n=2)	3.0
2010-2011 (n=5)	3.0
2011-2012 (n=5)	3.0

NSTA Intern Observation Guide SCED 7601 (V=1-3)

Candidate (n=2)	Mean of Candidates
2009-2010 (n=2)	3.0
2010-2011 (n=5)	3.0
2011-2012 (n=5)	3.0

IV.4.4 An interpretation of how that data provides evidence for meeting standards.

The data document that the candidates are teaching lessons that meet NSTA Standards. All candidates successfully completed the NSTA Observation assessments for SCED 7106 pre-professional and 7601 Internship.

IV.4 .5. Attachment of assessment documentation, including:

(a) **the assessment tool or description of the assignment.** The following tools include the assessment tool for the NSTA Standards. The forms are used to demonstrate candidate competence during the two pre-professional and one Internship field experiences. The assessments are made by the university supervisor and classroom teacher during the candidate's teaching experiences.

Starting fall 2008 the assessments will be the Pathwise Plus form that meets Arkansas State Teacher Licensure standards and the NSTA Safety and Welfare Assessment. Rubrics are attached.

IV.4. 5. Attachment of assessment documentation, including:

- (a) **the assessment tool or description of the assignment; and**
- (b) **the scoring guide for the assessment.**

<p>This form was used for assessment in 2005-2006, 2006-2007 and 2007-2008 for program completers. A new form that follows is also being used with new candidates starting spring 2008.</p>	
<p style="text-align: center;">NSTA Science Observation Guide based on NSTA Standards for Teachers 2003 Field Placement: SCED 7106 SCED 7601</p>	
Prepro or Intern:	Date:
Content Area and Grade:	School & Town:
Cooperating Teacher:	University Supervisor:
<p>Scoring Guide 1, 2, 3, or N/A</p>	
3 = Exceeds Expectations	Circle 3 when the student's performance is consistently well above what is expected at this stage of their development.
2 = Meets Expectations	Circle 2 when the student's performance is within the broad range of skills to be expected at this stage of their development.
1 =Needs Improvement	Circle 1 when the student's performance falls below the skills to be expected at this stage of their development.
N/A = Not Applicable	Circle if you do not observe. One lesson will not contain all of the standards.
<p>A student who scores one on four or more standards will be required to take science courses in the areas of deficiency and may be required to repeat the field placement. Students are to scan this page into their NSTA Portfolio.</p>	
Standard 1: Content	1 2 3 N/A
Standard 2: Nature of Science	1 2 3 N/A
Standard 3: Inquiry	1 2 3 N/A
Standard 4: Issues	1 2 3 N/A
Standard 6: Curriculum	1 2 3 N/A
Standard 7: Science in the Community	1 2 3 N/A
Standard 8: Assessment	1 2 3 N/A
Standard 9: Safety and Welfare	1 2 3 N/A

IV.4. 5. Attachment of assessment documentation, including:

- (a) the assessment tool or description of the assignment; and
- (b) the scoring guide for the assessment.

(Rubric being used starting spring 2008 but no completers in data) Graduate SCED NSTA ASSESSMENT – Observation of Student Internship Science/ NSTA Safety Standard #9				
Criterion	Unacceptable (Score 1)	Basic (Score 2)	Proficient (Score 3)	Accomplished (Score 4)
9A. Candidate understands 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.	Knows some guidelines regarding law and ethics, student safety and animal care, and maintenance and disposal of materials. Demonstrates minimal competencies for the law and ethics.	Know the guidelines regarding law and ethics, student safety and animal care, and maintenance and disposal of materials. Demonstrates understanding of some guidelines.	Knows and understands the guidelines regarding law and ethics, student safety and animal care, and maintenance and disposal of materials. Applies some of the guidelines in teaching.	Knows, understands, and applies the guidelines regarding laws and ethics of student safety and animal care, and maintenance and disposal of materials. Consistently demonstrates competencies.
9B. Candidate knows and practices safe and proper techniques for the preparation, storage, dispensing, supervision, and disposal of all materials used in science instruction.	Knows some practices of safe and proper techniques for the preparations, storage, dispensing, supervision and disposal of materials used in science instruction. Does not understand them safe practices	Knows the practices of safe and proper techniques for the preparations, storage, dispensing, supervision and disposal of materials used in science instruction. Demonstrates knowledge of some of the practices.	Knows and understands the practices of safe and proper techniques for the preparation, storage, dispensing supervision and disposal of materials used in science instruction. Applies some of the guidelines in teaching.	Knows, understands, and applies the practices of safe and proper techniques for the preparation, storage, dispensing, supervision and disposal of materials used in science instruction. Demonstrates competencies in this area.
9C. Candidate knows and follows emergency procedures, maintains safety equipment, and ensures safety procedures appropriate for the activities and	Knows some guidelines for emergency procedures, maintenance of safety equipment. Does not demonstrate understanding or practice those	Knows the guidelines for emergency procedures, maintenance of safety equipment. Understand some of the guidelines.	Knows, understands, and applies the guidelines for emergency procedures, maintenance of safety equipment. Practices some of the guidelines.	Knows, understands and applies the guidelines for emergency procedures, maintenance of safety equipment appropriate for the activities and

abilities of students.	guidelines.			ability of students. Demonstrates competency.
9D. Candidate treats all living organisms used in the classroom or found in the field in a safe, humane, and ethical manner and respects legal restrictions on their collection, keeping and use.	Knows some of the guidelines for treating living organisms in a safe, humane, and ethical manner and the legal restriction of their collection, keeping and use. Does not understand or practice those guidelines.	Knows the guidelines for treating living organisms in a safe, humane, and ethical manner and the legal restriction of their collection, keeping, and use . Understands some of the regulations, but does not practice those guidelines regularly.	Knows and understands the guidelines for treating living organisms in a safe, humane, and ethical manner and the legal restriction of their collection, keeping and use. Practices some of the guidelines regularly.	Knows and understands the guidelines for treating living organisms in a safe, human, and ethical manner and the legal restriction of their collection, keeping and use. Implements these guidelines consistently.

NSTA Graduate OBSERVATION FORM FOR NSTA ASSESSMENT #4						
Candidate Name _____ Candidate T- Number _____						
Observation Date _____						
<input type="checkbox"/> First Observation <input type="checkbox"/> Second Observation						
Standard	Unacceptable	Basic	Proficient	Accomplished	First Observation	Second Observation
9A						
9B						
9C						
9D						
Total – First Observation _____			* Total – Second Observation _____*			
Signature of Observer _____		Date of 1 st observation _____		Date of 2 nd observation _____		
* If the candidate scores basic or below on both observation, remediation may be required. Please consult the instructor of the class.						
Rubric for Student Internship Observation Point range on the Observation form						
Criterion 1			Unsatisfactory - Lack of understanding of Safety requirements. No mention of safety during teaching. Score Range 7 and below = Score 1			
Criterion 2			Basic – Demonstrates very minimum understanding of			

	safety requirements during teaching. Score Range of 8-10 Score 2
Criterion 3	Proficient – Demonstrates a more complete understanding of safety requirements during teaching. Score Range 11-14 Score 3
Criterion 4	Accomplished - Demonstrate a high level of competencies for safety during teaching. Score Range 15-16 Score 4

Pedagogical and Professional Knowledge, Skills and Dispositions Effective Practice			
NSTA Student Teaching Evaluation Rubric			
<p>This rubric presents the performance standards for Secondary Science Education candidates wishing to earn a recommendation for licensure in science. This instrument is to be completed by the mentor/cooperating teacher and the university/faculty supervisor. In order to earn recommendation, a candidate must achieve a minimum of a basic rating for each standard. All aspects of safety must be addressed in the student teaching evaluation form for science teachers.</p>			
Rating	Description		
	Emerging: Little or no evidence <i>or</i> evidence of meeting standard below the minimum acceptable expectations of the program.		
	Basic: The candidate exhibits minimum to intermediate performance in relations to essential knowledge, skills or dispositions required by the standard. Provides basic but substantially convincing evidence of attainment that meets or moderately exceeds minimum expectations.		
	Professional: The candidate exhibits intermediate to advanced performance in relation to essential knowledge, skills or dispositions required by the standard. Provides convincing evidence of sound work, usually with multiple examples of achievements that substantially exceed minimum expectations and show excellence in performance.		
Standard	Emerging (1-2 points)	Basic (3-4 points)	Professional (5-6 points)
*A. The candidate varies their actions, strategies, & methods to promote development of multiple student skills and levels of understanding. (NSTA 5a)	A routine is established with regard to teaching method, but seldom various instructional strategies.	A unit of science instruction includes two to three different strategies or methods that promote different levels of understanding and multiple student skills	Two or more units of science instruction include four or more examples of different strategies or methods that appropriately challenge multiple levels of students understanding and multiple student skills.
*B. The candidate promotes the learning of science by students with different needs, abilities, interest & backgrounds. (NSTA 5b)	Observed using less than 2 strategies to meet the needs of students with varying abilities, needs and backgrounds to promote science learning.	Observed using 2 or 3 strategies to meet the needs of students with varying abilities, needs and backgrounds to promote science learning.	Observed a consistent use of varying strategies to meet the needs of students with varying abilities, needs and backgrounds to promote science learning.
C. The candidate uses collaborative learning using different student	Observed using less than two different collaborative student group learning strategies	Observed the use of at least two different collaborative student group learning strategies	Observed consistent use of multiple forms of collaborative student group learning strategies (i.e., cooperative learning, group

group learning strategies. (NSTA 5c)	(i.e., cooperative learning, group work, and think-pair-share.)	(i.e., cooperative learning, group work, and think-pair-share.)	work, and think-pair-share.)
*D. The Candidate develops lessons that use advanced technologies to collect data and teach students science. (NSTA 5e)	Observed using less than two different modes of technology, including computer-based instruments, to teach students science and/or collect data in the process of teaching science.	Observed at least two different modes of technology, including computer-based instrument, to teach students science and/or collect data in the process of teaching science	Observed using three or more different modes of technology, including computer-based instruments, to teach students science and/or to collect data in the process of teaching science.
*E. The candidate uses prior conceptions and interests of students to promote their learning of science (NSTA 5e)	Observed less than two incidents of determining and responding to student prior conceptions in science both before and during instruction.	Observed at least two different incidents of determining and responding to student prior conceptions in science both before and during instruction. And, observed two incidents relating science to the personal lives and interests of students.	Observed consistent determination and response to student prior conceptions in science before and during instruction and effectively promotes new learning. And, consistently relates science to the personal lives and interests of students.
*F. The candidate creates a psychologically and socially safe and supportive learning environment. (NSTA 5f)	Is not observed conveying that all students are important and their experiences and ideas are valuable. Or, works to develop an orderly, functional learning environment, but has not established routines and mutual respect.	In two to three classes, observed conveying that all students are important and their experiences and ideas are valuable. And, generally maintains an orderly, functional learning environment through established routines and mutual respect.	Observed consistently conveying that all students are important and their experiences and ideas are valuable. And, daily maintains an orderly, functional learning environment through established routines and mutual respect.
G. The candidate practices legal and ethical responsibilities of science teachers for the welfare of their students. (NSTA 9a)	Has not responsibly followed the legal and ethical precedents for the welfare of students in the science classroom.	Generally follows the legal and ethical precedents for the welfare of students in the science classroom.	Consistently follows the legal and ethical precedents for the welfare of students in the science classroom and discusses reasons for such rules with students.
H. The candidate practices safe and proper techniques for the preparation, storage, dispensing, supervision, and disposal of all materials used in science instruction. (NSTA 9b)	Does not responsibly establish and follow procedures for the safe labeling, handling, storage and disposal of chemicals, and other materials. Or, MSDS file is not kept readily available or currently maintained.	Establishes and follows procedures for the safe labeling, handling, storage and disposal of chemicals, and other materials. And maintains an up-to-date and readily available MSDS file for all materials used in the classroom.	Establishes and follows procedures for the safe labeling, handling, storage and disposal of chemicals, and other materials. And, maintains an up-to-date and readily available MSDS file for all materials used in the classroom. And, stays informed of potential hazards and legal concerns. Communicates them to others teachers to maintain a school environment free of potential problems.
I. Candidate follows emergency procedures, maintains	Does not responsibly plan, practice or enforce safety procedures in all	Plans, practices and enforces safety procedures in all activities in the	Consistently plans, practices and enforces safety procedures in all activities in the classroom. And

safety equipment, and ensures safety procedures appropriate for the activities and the abilities of students. (NSTA 9c)	activities in the classroom. Or, is unaware of actions to take during an emergency and to prevent or report an emergency. Or, fails to appropriately respond to hazardous situations once identifies.	classroom. And knows actions to take during an emergency and to prevent or report an emergency. And, appropriately responds hazardous situations once identified.	demonstrates in the classroom that safety is a priority in science. And, takes action to prevent hazards and communicates needs and potential problems to administrators.
J. Treat all living organisms used in the classroom or found in the field in a safe, human, and ethical manner and respect legal restrictions on their collection, keeping, and use. (NSTA 9d)	Does not responsibly attend to, obey or enforce rules for the safe, proper and ethical treatment of animals.	Attends to, obeys and enforces rules for the safe, proper and ethical treatment of animals.	Consistently attends to, obeys and enforces rules for the safe, proper and ethical treatment of animals. And discuss reasons for such rules with students.
*K. The candidate engages in on-going professional development and participates in professional organizations beyond the requirements of the program. (NSTA 10A)	Provides no documentation of professional growth achieved through participation in professional activities beyond the university classroom.	Provides documentation of professional growth achieved through participation in professional activities beyond the university classroom.	Provides documentation of professional growth achieved through participation in professional activities beyond the university classroom. And provides documentation of publication and/or presentation in professional organizations.
*L. The candidate reflects on their teaching and identifies ways and means to grow professionally. (NSTA 10c)	Provides no written evidence of reflection on their teaching. OR Reflections on teaching and growth are not demonstrated through changes in classroom practices.	Provides written evidence of reflection on their teaching. And, provides written evidence on reflection on their teaching. And, reflection on teaching and growth is demonstrated through appropriate changes in classroom practices.	Provides consistent written evidence of reflection on their teaching. And, reflection on teaching and growth is demonstrated through changes in classroom practices that improves student learning. And, evaluates how these reflections impact practice and growth.
*M. The candidate uses information from students, supervisors, colleagues and others to improve their teaching and facilitate their professional growth. (NSTA 10c)	Little to no evidence where input from others (students, parents, colleagues, supervisors and others) improved teaching and professional growth.	At least two examples of input from multiple sources (students, parents, colleagues, supervisors and others) is professional growth.	Three or more examples of input from multiple sources (students, parents, colleagues, supervisors and others) is used to improve teaching and professional growth. And, candidate seeks input from multiple sources.
*N. The candidate interacts effectively with colleagues, parents, and students; mentors new colleagues; and fosters positive relationships with the	Only builds professional relationships with those who are responsible for mentoring/supervising. Or, does not interact appropriately with school colleagues, parents, and/or agencies in the	Builds professional relationships with those who are responsible for mentoring/supervising. Or, provides evidence of developing professional relationships with school colleagues, parents, and	Exhibits a proactive and equitable professional relationship with school colleagues, parents, and agencies in the larger community that facilitates positive interactions and strong communications of benefit to students and the

community (NSTA 10d)	larger community.	agencies in the larger community.	school.
* Areas that are often met with the general education students teaching evaluation form. Please be sure to double check your general form for alignment.			

This assessment will be used with Science Safety and Welfare Assessment. Data is being collected in Spring 2008 but no program completers to report data.

SCED 7106 or 7601 Pathwise Plus (Meets AR Teacher Licensure Standards) Assessment Report

Student _____ **School** _____

Observer _____ **Grade/Subject** _____ **Date** _____

Domain A: Planning Score _____

- _____ A1 Becoming familiar with relevant aspects of students' background knowledge and experiences
- _____ A2 Articulating clear learning goals for the lesson that are appropriate to the students.
- _____ A3 Demonstrating an understanding of the connections between the content that was learned previously, the current content, and the content that remains to be learned in the future.
- _____ A4 Creating or selecting teaching methods, learning activities, and instructional materials or other resources that is appropriate to the students.
- _____ A5 Creating or selecting evaluation strategies that are appropriate for the students and that are aligned with the goals of the lesson

Domain B: Classroom Management Score _____

- _____ B1 Creating a climate that promotes fairness
- _____ B2 Establishing and maintaining rapport with students
- _____ B3 Communicating challenging learning expectations to student
- _____ B4 Establishing and maintaining consistent standards of classroom behavior
- _____ B5 Making the physical environment as safe and conducive to learning as possible.

Domain C: Instruction Score _____

- _____ C1 Making learning goals and instructional procedures clear to students.
- _____ C2 Making content comprehensible to students.
- _____ C3 Encouraging students to extend their thinking.
- _____ C4 Monitoring students' understanding of content through a variety of means, providing feedback to students to assist learning, and adjusting learning activities as the situation demands.
- _____ C5 Using instructional time effectively.
- _____ C6 Communicating effectively.

Domain D: Professionalism Score _____

- _____ D1 Reflecting on the extent to which the learning goals were met
- _____ D2 Demonstrating a sense of efficacy
- _____ D3 Professional behavior
- _____ D4 Relations to parents
- _____ D5 Accepts responsibility and maintains accurate records
- _____ D6 Demonstrates professional ethics

Strengths and Achievements:
Priorities for Improvement:

**IV.5.5. Attachment of assessment documentation, including:
(c) Candidate data derived from the assessment.**

The following table shows the three candidates’ assessment of NSTA Standards. The scoring is on a 3 point value with 3=Exceeds Expectations, 2=Meets Expectations, 1=Needs Improvement, and NA=Not Applicable. The student will not be able to meet all Criteria in one lesson and may have an NA. A Candidate who scores 1 on six or more standards will be required to take science courses in the areas of deficiency and may be required to repeat the field placement.

NSTA Pre-Professional Observation Guide SCED 7106 (V=1-3) (# 5 & 10 not required)

Candidate (n=5)	1	2	3	4	6	7	8	9	Mean of Candidates
NCATE Standards									
2010-2011 (n=5)	2.85	2.65	3	2.35	2.5	2.75	2.70	2.45	2.65
2011-2012 (n=5)	3.2	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.37

NCATE Observation Guide SCED 7601 Internship (V=1-3) (# 5 & 10 not required)

Candidate (n=5)	1	2	3	4	6	7	8	9	Mean of Candidates
NCATE Standards									
2010-2011(n=5)	3	2.8	2.8	2.33	3	3	2.8	2.8	2.82
2011-2012 (n=5)	3.2	3.4	3.2	3.4	3.4	3.4	3.4	3.4	3.35

IV. ASSESSMENT # 5: CANDIDATE EFFECTS ON STUDENT LEARNING (Teacher Work Sample)

IV.5.1. A brief description of the assessment and its use in the program.

A NSTA Effect on Student Learning rubric is used to evaluate the candidates’ ability to effectively deliver and assess their effect on student learning from their classroom-based instruction. Instruction is based on NSTA standards 1a-c, 2c, 3b, 4b, 5 a-f, 6 a-b, 7b, 8 a-c, 9 a-d and planning for all learners including diverse populations and second language learners.

IV.5.2. A description of how this assessment specifically aligns with the standards it is cited for in Section III.

The sample should contain a pre and post test over the material to be covered. The work sample may encompass a single lesson or a complete unit. The lesson should demonstrate the association with the NSTA/NSES standards as well as containing the Arkansas Frameworks for teachers. Students should develop a graph showing learning from the pre to the post test and a reflection on the effectiveness of the lesson. The candidate should include a plan to improve teaching the lesson such as adding or deleting specific instructions or content. An analysis will be done on the student work and a reflection will be written regarding the effectiveness/lack of effectiveness. This rubric has four criteria that are valued on a

3 point scale with Level 1: Needs Improvement, Level 2: Meets Expectations, Level 3: Exceeds Expectations. Students are required to provide evidence from the Intern field experience SCED 7601 through a teacher work sample they implement that reflect their ability to plan and assess the impact their teaching of the NSTA/NSES standards is having on student learning. Candidates present their results in the NSTA exit portfolio.

IV.5.3. A brief analysis of the data findings:

Candidates have a mean score between 2.08 and 3.0 on a 3 point scale showing they meet or exceed expectations for positively impacting students through NSTA/NSES standards as demonstrated through a candidate work sample.

Data Analysis: Assignment: NSTA: Effect on Student Learning

Criterion	Mean Rating N=5	Mean Rating N=5	Level
	2010-2011	2011-2012	
Concept selection, NSTA Standards, Planning for all Learners	2.70	3	Meets Expectations
Teaching assignments	3.0	3.1	Meets Expectations
Design of assessments	2.70	3.1	Meets Expectations
Use of assessment	2.6	3.0	Meets Expectations

IV.5.4. An interpretation of how that data provides evidence for meeting standards.

The data for the NSTA Effect on Student Learning indicate that candidates have a positive effect on their 7-12 students in relation to NSTA/NSES standards and in encouraging all students including diverse populations, those with special needs, and English as second language learners to learn with mean ratings that meet expectations. They are successful in their ability to assess student learning and to use the assessment to improve future lessons.

IV.5.5. Attachment of assessment documentation, including:

- (a) the assessment tool or description of the assignment; and**
- (b) the scoring guide for the assessment.**

NSTA: Effect on Student Learning Work Sample Rubric

A study of student learning of key science concepts including three teaching assignments designed to promote student learning; responses to those assignments by three students, and an analysis of the student learning demonstrated by the students. Emphasis is placed on meeting the needs of diverse and special needs learners. Reflection and analysis evaluate the success of the teaching for each of the students and discuss ways that future teaching will be influenced by the results of the analysis.

Criterion 1 Concept selection, NSTA Standards, Planning for all Learners

Criterion Level	Score	Expectation	Assessment
Level 1: Not Acceptable	1.0	Learning goals are not evident or are off target for the discipline	
Level 2 : Meets Expectations	2.0	Instruction is designed around clear objectives that are part of NSTA/NSES or Arkansas frameworks.	
Level 3: Exceeds Expectations	3.0	Concept taught is central to the discipline and integrates learning expectations from the state framework into a coherent rationale.	
Criterion 2: Teaching Assignments			
Criterion Level	Score	Expectation	Assessment
Level 1: Not Acceptable:	1.0	Teaching assignments either do not teach to the objectives or are poorly designed.	
Level 2 Meets Expectations	2.0	Teaching assignments teach to the objectives.	
Level 3 Exceeds Expectations	3.0	Teaching assignment clearly designed to encourage depth and mastery of learning objectives.	
Criterion 3 Design of assessments			
Criterion Level	Score	Expectation	Assessment
Level 1: Not Acceptable:	1.0	Assessments will give the teacher little information about student’s knowledge & skills.	
Level 2 Meets Expectations	2.0	Assessments provide the teacher with some information about student’s knowledge and skills.	
Level 3 Exceeds Expectations	3.0	Assessments are clearly designed to provide the teacher with information about student’s knowledge and skills.	
Criterion 4 Use of Assessment			
Criterion Level	Score	Expectation	Assessment
Level 1: Not Acceptable	1.0	Student either does not demonstrate understanding of the ways assessment can improve teaching or is unwilling to make changes.	
Level 2 Meets Expectations	2.0	Student demonstrates the ability to use assessment of student knowledge to inform teaching.	
Level 3 Exceeds Expectations	3.0	Student demonstrates that the information from assessing student knowledge is regularly used to improve teaching.	

**IV.5.5. Attachment of assessment documentation, including:
(c) Candidate data derived from the assessment.**

Data Analysis: Assignment: NSTA/NSES: Effect on Student Learning (v=1-3)

Candidates	2010-2011 (n=5) Mean Rating	2011-2012 (n=5) Mean Rating
Concept selection, NSTA/NSES Standards, Planning for all Learners	2.7	3
Teaching assignments	3.2	3.1
Design of assessments	2.75	3.1
Use of assessment	2.6	3.0
Overall Mean per Year	2.81	3.1

ASSESSMENT # 6: Legal issues, safety and ethical treatment of living things.

IV.6.1. Description of the assessment and its use in the program.

Candidates were required to demonstrate safety in a variety of assessments that included: a unit plan, a variety of lessons and application during all field experiences. You can note safety requirements on previous rubrics. Up until fall 2007, candidates were required to demonstrate Legal, Safety and Ethical Issues through a safety quiz based on the *Laboratory Safety Guide for Arkansas K-12 Schools*:

Title: *Laboratory Safety Guide for Arkansas K-12 Schools*. (1999) **Descriptors:** [Elementary Secondary Education](#); [Laboratory Safety](#); [School Safety](#); [Science Instruction](#); [Science Laboratories](#); [Standards](#) For full text:

http://arkedu.state.ar.us/pdf/lab_safe2.pdf **Abstract:** This document presents laboratory safety rules for Arkansas K-12 schools which were developed by the Arkansas Science Teachers Association (ASTA) and the Arkansas Department of Education (ADE). Contents include: (1) "Laboratory Safety Guide for Arkansas K-12 Schools"; (2) "Safety Considerations"; (3) "Safety Standards for Science Laboratories"; (4) "Laboratory and Classroom Sizes"; (5) "Designing a Classroom and Lab"; (6) "Fire Extinguishers"; (7) "Storage Facilities"; (8) "Legal Concerns"; and (9) "Laboratory Safety Procedures." (YDS)

In addition to the above assessments of safety in planning and through application in the field, candidates will be required to complete a safety unit for their field Internship and successfully pass a safety quiz based on the Arkansas Safety Standards in the SCED 7202 Secondary Science Methods. The test and lesson will be graded by comprehensive rubrics that have four criteria for each of the four standards in 9 Safety and Welfare. Level 1 is unacceptable, Level 2 is satisfactory, Level 3 is good and Level 4 Excellent.

IV.6.2. A description of how this assessment specifically aligns with the standards it is cited for in Section III.

Candidates are required to complete a safety quiz consisting of 20 questions (5 from 9.A, 5 from 9.B, 5 from 9.C, and 5 from 9.D). Questions will be alternated on the quiz but will cover all four components each time. Also, candidates are required to develop a safety lesson that provides their students with an understanding of safety and welfare by addressing each of the four safety themes from NSTA 9 (A, B, C, and D).

IV.6.3. A brief analysis of the data findings.

The data for the Science Safety Quiz are included for the years needed.

Safety Quiz

Safety Quiz Candidates		2009-2010 n=2	2010-2011 n=5	2011-2012 n=5	Mean of Standards
9A Legal and Ethical	Acceptable		3.4	3.1	
9B Maintenance and Disposal of Materials	Acceptable		3.7	3.75	
9C Know and Follow Emergency Procedures	Acceptable		3.5	3.0	
9D Care and Use of Animals	Acceptable		3.5	3.4	
Mean if Candidates	Acceptable range of scores				

IV.6.4. An interpretation of how that data provides evidence for meeting standards.

All candidates must score satisfactory (Level 2) or above; if not the candidate will be required to repeat the module and retake the test with similar but different questions and/or redo the safety lesson.

IV.6.5. Attachment of assessment documentation, including:

- (a) the assessment tool or description of the assignment;
- (b) the scoring guide for the assessment.

NSTA Safety Quiz Examples

Science Laboratory Safety Exam Name _____

100 points total possible Date _____

PART A - Questions 1- 22 are to be answered in a proctored environment without use of any reference materials. These questions are based on Science and Safety: Making the Connection Totaling 56 points

PART B - Questions 23 to 33 can be answered as a take-home exam with the use of reference materials. Totaling 44 points

PART A – 56 points

Multiple choice – 2 points each answer:

_____ 1. If a student spills concentrated HCl on the floor,

- A. Pour “kitty litter” on it
- B. Neutralize it with vinegar
- C. Tell the student to mop up with spill with paper towels

- D. None of the above
- _____ 2. Solid chemical waste
- A. can be placed in the trash can
 - B. can be left on the bench top
 - C. should be placed in appropriately-labeled containers
 - D. any of the above
3. If your science student gets a chemical in her eye, which do you do first?
- A. Flush the eye immediately with H₂O
 - B. Take her to the school nurse
 - C. Rush her to the doctor or emergency room
 - D. Any of the above
- _____ 4. In your science lab,
- A. No live animals should be present
 - B. Students should wear gloves when handling vertebrates
 - C. All live animals must be approved by a veterinarian
 - D. Domesticated and wild animals can be used
- _____ 5. If a student brings a sample of poison ivy to your lab,
- A. toss it in the trash
 - B. burn it in an incinerator
 - C. tell the student to take it home
 - D. none of the above
- _____ 6. If a student spills concentrated sodium hydroxide on a large part of his body,
- A. Drench the clothing with water
 - B. Cut/remove the clothing from the student
 - C. Apply vinegar to any affected skin that appears to be burned
 - D. All of the above
- _____ 7. Which of the following should be used to clean up body fluids, pathogenic bacteria or spilled DNA samples?
- A. 10% Clorox bleach
 - B. mop
 - C. "kitty litter"
 - D. any of the above
- _____ 8. Which of the following is not a hazardous chemical?

- A. sodium hydroxide
- B. Sodium hydrogen carbonate
- C. Acetic acid
- D. All of the above are hazardous

9. Duty of supervision for a science teacher includes

- A. providing younger students less supervision than older students
- B. prohibiting misbehavior of any type
- C. exemption from liability if you don't take action
- D. all of the above

10. Duty of maintenance for a science teacher requires

- A. verbal communication of hazardous conditions or defective equipment to responsible administrators.
- B. No use of defective equipment
- C. Storing chemicals in alphabetical order
- D. All of the above

11. Duty of instruction for a science teacher includes

- A. expecting students to wear appropriate PPE if the teacher does not
- B. pre-labs for only experiments that use dangerous or hazardous chemicals
- C. describing any reasonable foreseeable dangers in an experiment
- D. all of the above

12. Safety glasses(goggles) used by students

- A. must have ANSI Z87 stamped on them
- B. must be worn only by the student performing the experiment
- C. are not required if a student wears eyeglasses
- D. all of the above

13. Broken glassware should be

- A. disposed of in the trash can
- B. placed in specially-labeled glass disposal containers
- C. used if it will still function
- D. all of the above

14. In the chemistry lab, for safety reasons, when a concentrated acid is mixed with water:

- A. the water is always added to the acid
- B. the acid is always added to the water

- C. these can only be mixed at cold temperatures
D. these can never be mixed
- _____ 15. Which of the following is optional, for a science laboratory?
A. MSDS sheets
B. Student safety contracts
C. First aid kits
D. None of the above
- _____ 16. If a student spills some 8M H_2SO_4 on his arm, what treatment should be used?
E. Neutralize it immediately with a paste of NaOH in water
F. Rinse it with water followed by a dilute solution of $NaHCO_3$
G. Wash it with a solution of concentrated aqueous NH_3
H. Wrap it tightly with gauze coated with petroleum jelly.
- _____ 17. In storing chemicals,
A. Store flammables and corrosive chemicals together in alphabetical order
B. Store oxidizers and reducers together in alphabetical order
C. Use a ventilated storage space
D. All of the above
- _____ 18. Which of the following should be used to put out a fire in person's hair or clothing?
A. Your hands
B. A fire blanket
C. Fire extinguisher
D. Water from the sink
- _____ 19. Which of the following is the best reason to keep all classroom and lab aisles and walkways clear?
A. To allow safe exit
B. to allow the room to be cleaned
C. to make the class notes easier to find
D. to make the classroom and lab attractive
- _____ 20. For any accident that occurs in lab, you should
A. Write an accident report and obtain witness reports
B. Call for emergency medical assistance
C. Use the emergency shower
D. All of the above
21. List 8 safety features that must be included in any science laboratory. (8 points)

22. List 4 sources you might use as references for lab safety guidelines (8 points)

Science Laboratory Safety Exam Name _____

PART B - Questions 23 to 33 can be answered as a take-home exam with the use of reference materials. Totaling 44 points

PART B – Take Home Exam 44 points

Mutliple Choice – 2 points each:

_____ 23. An autoclave is designed to sterilize with:

- A. dry heat and methane gas
- B. steam and pressure
- C. boiling water
- D. dessication

_____ 24. Formaldehyde (formalin) was previously used as a preservative for biological samples for classroom use but its use was largely discontinued because it

- A. is highly flammable
- B. is a dessicant
- C. promotes bacterial growth
- D. is carcinogenic

_____ 25. Human tissue (including blood) is not used for most biology labs because A. ethical concerns

- B. health risks
- C. confidentially
- D. limited availability

_____ 26. Instructors keeping living animals in classrooms must consider state wildlife regulations only for

- A. any wild-caught, native mammal
- B. any wild-caught, native bird
- C. any warm-blooded animal
- D. any animal

_____ 27. Native songbirds may not be used in classrooms because of

- A. federal restrictions
- B. state restrictions
- C. bird flu hazards
- D. rabies liability

_____ 28. Skeletal remains or parts of animals found in the field can be legally collected and retained except

<p>A. endangered species</p> <p>B. native birds</p> <p>C. venomous snakes</p> <p>D. bats</p> <p>29. While living vertebrate animals can provide important teaching opportunities, maintenance of such animals in the classroom brings with it a heavy responsibility that includes the necessity to consider methods of euthanasia should the animal become sick or injured. Using the policy statement link below (or references contained therein), discuss how you would deal with euthanasia for a rat and for a snake that have either developed physical abnormalities that inhibit their normal movement (such as a cancer) or are otherwise behaving abnormally. (8 points)</p> <p>30. A student proposes to conduct a science fair experiment using positive reinforcement in a small colony of laboratory mice. Describe the oversight requirements considered appropriate and questions that should be asked of the student and his/her advisor. (8 points)</p> <p>Policy statement from UAIR on animal use in secondary schools. <> http://www.avma.org/issues/policy/animal_welfare/precollege.asp</p> <p>31. Describe the appropriate detailed procedures to follow when a student breaks a mercury thermometer- (5 points)</p> <p>32. Sketch the NFPA “diamond” and explain its significance and describe the differences in fire extinguishers. (5 points)</p> <p>33. List the 16 ANSI-specified sections of an MSDS. (6 points)</p>

NSTA Safety Quiz Rubric

<p>NSTA Safety Quiz Rubric</p> <p>Students are required to complete a safety quiz consisting of 100 points 9 A-D. Questions will be alternated on the quiz but will cover all four components each time. 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.</p> <p>This rubric has 4 criteria that are valued on a 4 point scale. Level 1 is unacceptable, Level 2 is satisfactory, Level 3 is good and Level 4 Excellent</p>	
<p>Criterion 1: 9A Legal and Ethical</p>	<p>9A. Candidate understands 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. Safety and liability are especially of concern to science teachers, given the variety of environments in which they may teach and the materials they may use. Nagel (1982) recommended that safety education should be a condition of certification. Flinn Scientific Inc. (1992) has developed a generic chemical hygiene plan for high school laboratories covering</p>

	<p>many procedural issues. Guidelines and recommendations are also available from the American Chemical Society for chemistry laboratories (American Chemical Society, 1995). Yohe and Dunkleberger (1992) have suggested an inservice format for teaching safety that is applicable to all teachers of science.</p>
<p>Criterion 1: 9B Maintenance and disposal of materials</p>	<p>9B. Candidate knows and practices safe and proper techniques for the preparation, storage, dispensing, supervision, and disposal of all materials used in science instruction. Teacher preparation programs must ensure that candidates possess the knowledge needed to maintain a safe environment for all students. This includes knowledge of how to avoid or control hazardous materials or organisms, how to prepare and/or store materials properly, and how to clean up spills and dispose of chemicals safely. Candidates must know how to check and use safety equipment properly and the hazards of improperly shielded equipment, and must be able to avoid risks from fire hazards and biological contaminants.</p>
<p>Criterion 3: 9.C Know and Follow Emergency procedures</p>	<p>9C. Candidate knows and follows emergency procedures, maintains safety equipment, and ensures safety procedures appropriate for the activities and abilities of students. Candidates should know the common emergency precautions, responses, and reporting procedures that they are to follow in the event problems arise. Safety readings, tests, artifacts, projects, classroom safety evaluations, and so forth may be used to demonstrate knowledge and attention to safety matters.</p>
<p>Criterion 4: 9.D Care and use of animals</p>	<p>9D. Candidate treats all living organisms used in the classroom or found in the field in a safe, humane, and ethical manner and respects legal restrictions on their collection, keeping and use. In addition to safety concerns, candidates who may keep or use animals in the classroom or field should be knowledgeable of their care. They should know and comply with laws and professional standards for classroom treatment of animals and should be aware of regulations controlling the use of sentient, usually vertebrate, animals. They should be able to properly maintain the environment of the animals and dispose of wastes, respond to the illness of the animals and ensure that they have the food, water, space, shelter and care needed for their well-being.</p>
<p>Level 1 Unacceptable Score:1.0</p>	<p>Candidate answers 69% or less showing candidate does not know some guidelines regarding law and ethics, student safety and animal care, and maintenance and disposal of materials. Demonstrates minimal competencies for the law and ethics.</p>
<p>Level 2 Satisfactory Score:2.0</p>	<p>Candidate answers 70% to 79% showing candidate knows the guidelines regarding law and ethics, student safety and animal care, and maintenance and disposal of materials Demonstrates understanding of some guidelines.</p>
<p>Level 3 Good Score:3.0</p>	<p>Candidate answers 80% to 89% showing candidate knows and understands the guidelines regarding law and ethics, student safety and animal care, and maintenance and disposal of materials. Applies some of the guidelines in teaching.</p>

Level 4 Excellent Score:4.0	Answers 90% to 100% showing candidate knows, understands, and applies the guidelines regarding laws and ethics of student safety and animal care, and maintenance and disposal of materials. Consistently demonstrates competencies.
All Criteria Link to standards 9a-d	<ul style="list-style-type: none"> • Standard 9a: 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. • Standard 9b: Know and practice safe and proper techniques for the preparation, storage, dispensing, supervision, and disposal of all materials used in science instruction. • Standard 9c: Know and follow emergency procedures, maintain safety equipment, and ensure safety procedures appropriate for the activities and the abilities of students. • Standard 9d: 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.

NSTA Safety Lesson Assignment

Safety Lesson for Life/Earth/Physical Science SCED 7202 Science Methods

Rational: Teachers of science organize safe and effective learning environments that promote the success of students and the welfare of living things. They require and promote knowledge and respect for safety.

Objectives: Candidates in science teaching will provide evidence that they:

1. Know and 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.
2. Know and understand safe and proper techniques for the preparation, storage, dispensing, supervision, and disposal of all materials used in science instruction.
3. Know and follow emergency procedures, maintain safety equipment, and ensure safety procedures appropriate for the activities and the abilities of students.
4. Know how to keep and treat living organisms used in the classroom or found in the field in a safe, humane, and ethical manner.
5. Know and respect legal restrictions on collection, keeping, and using living things.

Procedure: You are to develop a lesson on safety based on the NSTA Science Safety Standards listed above. Use the lesson plan template from your field handbook for all lessons. If you use a PowerPoint in the lesson, attach a print out with your lesson. Also attach all forms of assessment you will use in the lesson.

Assessment: You will be assessed by the attached rubric when you upload your lesson in Chalk and Wire in your NSTA portfolio. Any part of the lesson that is unacceptable will have to be redone and uploaded to Chalk and Wire.

NSTA Safety Lesson Grading Rubric

<p>NSTA Safety Lesson</p> <p>This rubric has 4 criteria that are valued on a 4 point scale. Level 1 is unacceptable, Level 2 is satisfactory, Level 3 is good and Level 4 Excellent.</p> <p>Candidates are required to develop a safety lesson that provides their students with an understanding of safety and welfare by addressing each of the four safety themes from NSTA 9.(A, B, C, and D). 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.</p>	
<p>Criterion 1: 9A Legal and Ethical</p>	<p>9A. Candidate understands 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. Safety and liability are especially of concern to science teachers, given the variety of environments in which they may teach and the materials they may use. Nagel (1982) recommended that safety education should be a condition of certification. Flinn Scientific Inc. (1992) has developed a generic chemical hygiene plan for high school laboratories covering many procedural issues. Guidelines and recommendations are also available from the American Chemical Society for chemistry laboratories (American Chemical Society, 1995). Yohe and Dunkleberger (1992) have suggested an inservice format for teaching safety that is applicable to all teachers of science.</p>
<p>Level 1 Unacceptable Score:1.0</p>	<p>Lesson demonstrates candidate does not know some guidelines regarding law and ethics, student safety and animal care, and maintenance and disposal of materials. Demonstrates minimal competencies for the law and ethics.</p>
<p>Level 2 Satisfactory Score:2.0</p>	<p>Lesson demonstrates candidate knows the guidelines regarding law and ethics, student safety and animal care, and maintenance and disposal of materials Demonstrates understanding of some guidelines.</p>
<p>Level 3 Good Score:3.0</p>	<p>Lesson demonstrates candidate knows and understands the guidelines regarding law and ethics, student safety and animal care, and maintenance and disposal of materials. Applies some of the guidelines in teaching.</p>
<p>Level 4 Excellent Score:4.0</p>	<p>Lesson demonstrates candidate knows, understands, and applies the guidelines regarding laws and ethics of student safety and animal care, and maintenance and disposal of materials. Consistently demonstrates competencies.</p>
<p>All Criteria Link to the standards 9a-d</p>	<ul style="list-style-type: none"> • Standard 9a: 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.

	<ul style="list-style-type: none"> • Standard 9b: Know and practice safe and proper techniques for the preparation, storage, dispensing, supervision, and disposal of all materials used in science instruction. • Standard 9c: Know and follow emergency procedures, maintain safety equipment, and ensure safety procedures appropriate for the activities and the abilities of students. • Standard 9d: 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.
Criterion 1: 9B Maintenance and disposal of materials	9B. Candidate knows and practices safe and proper techniques for the preparation, storage, dispensing, supervision, and disposal of all materials used in science instruction. Teacher preparation programs must ensure that candidates possess the knowledge needed to maintain a safe environment for all students. This includes knowledge of how to avoid or control hazardous materials or organisms, how to prepare and/or store materials properly, and how to clean up spills and dispose of chemicals safely. Candidates must know how to check and use safety equipment properly and the hazards of improperly shielded equipment, and must be able to avoid risks from fire hazards and biological contaminants.
Level 1 Unacceptable Score:1.0	Lesson demonstrates candidate does not know practices of safe and proper techniques for the preparations, storage, dispensing, supervision and disposal of materials used in science instruction. Does not understand safe practices.
Level 2 Satisfactory Score:2.0	Lesson demonstrates candidate knows the practices of safe and proper techniques for the preparations, storage, dispensing, supervision and disposal of materials used in science instruction. Demonstrates knowledge of some of the practices.
Level 3 Good Score:3.0	Lesson demonstrates candidate knows and understands the practices of safe and proper techniques for the preparation, storage, dispensing supervision and disposal of materials used in science instruction. Applies some of the guidelines in teaching.
Level 4 Excellent Score:4.0	Lesson demonstrates candidate knows, understands, and applies the practices of safe and proper techniques for the preparation, storage, dispensing, supervision and disposal of materials used in science instruction. Demonstrates competencies in this area.
Criterion 3: 9.C Know and Follow Emergency procedures	9C. Candidate knows and follows emergency procedures, maintains safety equipment, and ensures safety procedures appropriate for the activities and abilities of students. Candidates should know the common emergency precautions, responses, and reporting procedures that they are to follow in the event problems arise. Safety readings, tests, artifacts, projects, classroom safety evaluations, and so forth may be used to demonstrate knowledge and attention to safety matters.
Level 1 Unacceptable Score:1.0	Lesson demonstrates candidate does not know some guidelines for emergency procedures, maintenance of safety equipment. Does not demonstrate understanding or practice those guidelines.
Level 2 Satisfactory	Lesson demonstrates candidate knows the guidelines for emergency

Score:2.0	procedures, maintenance of safety equipment. Does understand some of the guidelines.
Level 3 Good Score:3.0	Lesson demonstrates candidate knows and understands the guidelines for emergency procedures, maintenance of safety equipment.
Level 4 Excellent Score:4.0	Lesson demonstrates candidate knows, understands and applies the guidelines for emergency procedures, maintenance of safety equipment appropriate for the activities and ability of students. Demonstrates competency.
Criterion 4: 9.D Care and use of animals	9D. Candidate treats all living organisms used in the classroom or found in the field in a safe, humane, and ethical manner and respects legal restrictions on their collection, keeping and use. In addition to safety concerns, candidates who may keep or use animals in the classroom or field should be knowledgeable of their care. They should know and comply with laws and professional standards for classroom treatment of animals and should be aware of regulations controlling the use of sentient, usually vertebrate, animals. They should be able to properly maintain the environment of the animals and dispose of wastes, respond to the illness of the animals and ensure that they have the food, water, space, shelter and care needed for their well-being.
Level 1 Unacceptable Score:1.0	Lesson demonstrates candidate does not know some of the guidelines for treating living organisms in a safe, humane, and ethical manner and the legal restriction of their collection, keeping and use. Does not understand or practice those guidelines.
Level 2 Satisfactory Score:2.0	Lesson demonstrates candidate knows the guidelines for treating living organisms in a safe, humane, and ethical manner and the legal restriction of their collection, keeping, and use. Understands some of the regulations, but does not practice those guidelines regularly.
Level 3 Good Score:3.0	Lesson demonstrates candidate knows and understands the guidelines for treating living organisms in a safe, humane, and ethical manner and the legal restriction of their collection, keeping, and use. Understands the regulations and practices those guidelines regularly.
Level 4 Excellent Score:4.0	Lesson demonstrates candidate knows, and understands the guidelines for treating living organisms in a safe, human, and ethical manner and the legal restriction of their collection, keeping and use. Implements these guidelines consistently.

IV.6.5. Attachment of assessment documentation, including:

c) Candidate data derived from the assessment.

Safety Quiz (N=?) (v= 1-4)

Safety Quiz Candidates	2010-2011 n=2	2011- 2012 n=5	Mean of Standards
9A Legal and Ethical	3.4	3.1	
9B Maintenance and Disposal of Materials	3.7	3.75	
9C Know and Follow Emergency	3.5	3.0	

Procedures			
9D Care and Use of Animals	3.5	3.4	
Mean if Candidates	3.55	3.3	

IV.7.1. Science Research Assessment in M.Ed in Secondary Education for Research and Investigation NSTA Standards 1d-e and 3a.

Candidates entering the Masters Initial Licensure Program should have had courses or real life experiences that demonstrate NSTA Standards 1 d-e, and 3a. A Research Matrix is completed by the candidate before admission to the program and is evaluated along with the transcript evaluation to meet Competency Requirements for all science teachers.

IV.7.2. A description of how this assessment specifically aligns with the standards it is cited for in Section III.

The M.Ed. in Secondary Education with Science content is designed for candidates with an undergraduate major in a science that will align with teacher licensure areas of Physical-Earth Science or Life-Earth Science. The areas may include Biology, Chemistry, Physics and Earth Science. Nontraditional candidates changing careers from other disciplines will be required to complete the equivalent of a major in the licensure area as defined by the Arkansas Department of Education and the National Council for Accreditation of Teacher Education (NCATE) affiliated specialty organization. In addition to an undergraduate degree in science, candidates are required to demonstrate competency in research and investigation through course work from a degree or from real world application.

Candidates must present transcripts documenting that the content defined by NSTA was indeed taught and that the candidate has mastery of it. Documentation could include a course description, a course syllabus, a statement from the instructor or graded papers from the course. Students may also submit written evidence of mastery of knowledge from nontraditional sources such as continuing education courses or professional activity. Students may also submit written evidence, such as publications of mastery of content through career-related training or experience. Assessment criteria are determined by Level 1: Unacceptable, Level 2: Satisfactory, Level 3: Good and Level 4: Excellent.

IV.7.3. A brief analysis of the data findings. (This is no longer required by NSTA)

NSTA Research and Investigation (N=3) (v=1-4)

	1. Content (d) understands research and can successfully design, conduct, report, and evaluate investigations in science	1. Content (e) understands and can successfully use mathematics to process and report data, and solve problems, in their field(s) of licensure	3. Inquiry (a) understands the processes, tenets, and assumptions of multiple methods of inquiry leading to scientific knowledge	Technology Competence for Research
Mean of Standards				

NSTA Research and Investigation (n=3) (v=1-4)

Candidates	Mean of Candidates
2011-2012 (n=5)	3.3
2010-2011 (n=5)	3.0

IV.7.4. An interpretation of how that data provides evidence for meeting standards.

Assessment criteria are determined by Level 1: Unacceptable, Level 2: Satisfactory, Level 3: Good and Level 4: Excellent. All candidates must score satisfactory (Level 2) or above. If not the candidate will be required to take a research based course in candidate’s area of science. Three of the three candidates were at level 2 or above. Some candidates scored a Level 4 Excellent because they had a M.ED degree in science and completed a master’s thesis. Other candidates had researched based undergraduate courses and/or also worked in laboratory jobs in engineering firms or medical labs giving them a very good understanding of scientific research.

IV.7.5. Attachment of assessment documentation, including:

(a) the assessment tool or description of the assignment;

(b) the scoring guide for the assessment.

In addition to an undergraduate degree in science, candidates are required to demonstrate competency in research and investigation through course work from a degree or from real world application. Candidates must present transcripts documenting that the content defined by NSTA was indeed taught and that the candidate has mastery of it. Documentation could include a course description, a course syllabus, a statement from the instructor or graded papers from the course. Students may also submit written evidence of mastery of knowledge from nontraditional sources such as continuing education courses or professional activity. Students may also submit written evidence, such as publications of mastery of content through career-related training or experience.

Assessment and Documentation for UALR Secondary Science Research and Investigation				
Name:		Content Major:	Hours:	GPA:
University:		Year:	Required research based course/s:	
Research Requirements Based on Research in Courses	UALR Course or Equivalent Number and Title	University	Year	Grade
1. Content (d) understands research and can successfully design, conduct, report, and evaluate investigations in science				
1. Content (e) understands and can successfully use mathematics to process and report data, and solve problems, in their field(s) of licensure				
3. Inquiry (a) understands the processes, tenets, and assumptions of multiple methods of inquiry leading to scientific knowledge				
Technology Competence for Research				
Research Requirements Based on Research in Work (Real World Application)	Job Title	Job Responsibilities	Date of Employment	Research Application

1. Content (d) understands research and can successfully design, conduct, report, and evaluate investigations in science				
1. Content (e) understands and can successfully use mathematics to process and report data, and solve problems, in their field(s) of licensure				
3. Inquiry (a) understands the processes, tenets, and assumptions of multiple methods of inquiry leading to scientific knowledge				
Technology Competence for Research				

NSTA Research and Investigation (This rubric has 1 criterion that is valued on a 4 point scale. Level 1 is unacceptable, Level 2 is satisfactory, Level 3 is good and Level 4 Excellent.)

<p>NSTA Research and Investigation</p> <p>Teachers of science understand and can articulate the knowledge and practices of contemporary science. They can interrelate and interpret important concepts, ideas, and applications in their fields of licensure; and can conduct scientific investigations. To show that they are prepared in content, teachers of science must demonstrate that they:</p> <p>d. Understand research and can successfully design, conduct, report and evaluate investigations in science. e. Understand and can successfully use mathematics to process and report data, and solve problems, in their field(s) of licensure.</p> <p>Candidates must document competency in Research and Investigation through: Course Work requiring scientific research such as senior or graduate research or thesis in science or mathematics or real world application such as conducting research in a lab during a job.</p>	
Level 1 Unacceptable	Candidate supplies little to no documentation demonstrating an understanding and application of scientific research.
Level 2 Satisfactory	Candidate supplies satisfactory documentation demonstrating an understanding and application of scientific research.
Level 3 Good	Candidate supplies good documentation demonstrating an understanding and application of scientific research.
Level 4 Excellent	Candidate supplies excellent documentation demonstrating an understanding and application of scientific research.
Links to standards	<ul style="list-style-type: none"> • Standard 1a: 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 NSTA. • Standard 1e: Understand and can successfully use mathematics to process and report data, and solve problems, in their fields of licensure.

**IV.7.5. Attachment of assessment documentation, including:
c) Candidate data derived from the assessment.**

NSTA Research and Investigation

Candidates	1. Content (d) understands research and can successfully design, conduct, report, and evaluate investigations in science	1. Content (e) understands and can successfully use mathematics to process and report data, and solve problems, in their field(s) of licensure	3. Inquiry (a) understands the processes, tenets, and assumptions of multiple methods of inquiry leading to scientific knowledge	Technology Competence for Research	Mean of Candidates
2009-2010 n=3	3	3	3	3.67	2.92

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2010-2011 n=2	3.83	3.67	3.67	3.67	3.71
2011-2012 n=5	3.75	3.75	3.75	3.75	3.75
Mean of Standards					

ASSESSMENT # 8: NSTA EXIT PORTFOLIO

IV.8.1. Description of the assessment and its use in the program.

Students are required to complete an NSTA Exit Portfolio as a part of their Graduate Secondary Exit Portfolio. The artifacts are displayed and graded on Chalk and Wire which is the College of Education’s research data base. Students must defend their portfolio and receive a satisfactory from all Committee Members which include education and science faculty. The portfolio is designed to meet all of NSTA Standards 1-10.

IV.8.2. A description of how this assessment specifically aligns with the standards it is cited for in Section III.

The NSTA Portfolio rubric aligns to the NSTA standards. Students must submit artifacts that reflect their content knowledge in science, ability to plan, teach and assess the NSTA standards and to communicate and reflect on the NSTA standards.

Sections of Portfolio Rubric	Alignment to NSTA Standards
Licensure assessment	Content1a-c, Nature of Sci. 2a, 2b, Inquiry: 3a, 3b
Assessment of content knowledge in science	Content1a-c, Nature of Sci. 2a, 2b, Inquiry: 3a, 3b, Issues 4a, Safety & Welfare 9a-d
Assessment of Candidate Ability to Plan; Lesson Planning and Unit Development	General Teaching Skills: 5a, 5b, 5c, 5d
Student Teaching 7106 Pathwise Plus	Content: 1.a, 1.b, 1c, Nature of Science: 2a, 2b, Inquiry: 3a, 3b, General Teaching Skills: 5a, 5b, 5c, 5d, Curriculum: 6a, 6b, Science in the Community: 7b, Assessment: 8a, 8b, 8c, Safety & Welfare 9a, 9b, 9c, 9d
Internship 7601 Pathwise Plus Assessment	Content: 1.a, 1.b, 1c, Nature of Science: 2a, 2b, Inquiry: 3a, 3b, General Teaching Skills: 5a, 5b, 5c, 5d, Curriculum: 6a, 6b, Science in the Community: 7b, Assessment: 8a, 8b, 8c, Safety & Welfare 9a, 9b, 9c, 9d, Professional Growth: 10b, 10c, 10d
NSTA Internship 7601 Assessment-Safety & Welfare	Safety and Welfare: 9a, 9b, 9c, 9d
Assessment of candidate effect on student learning	Content: 1.a, 1.b, 1c, Nature of Science: 2a, 2b, 2c, Inquiry: 3a, 3b, 3c, General Teaching Skills: 5a, 5b, 5c, 5d,5e, Curriculum: 6a, 6b, Assessment: 8a, 8b, 8c, Safety & Welfare , 9b, 9d,
Legal, Safety and Ethical Issues	Safety and Welfare: 9a, 9b, 9c, 9d
Research & Investigation	Content: 1.a, 1c
Virtual Field Trip, WebQuest, Technology	Content: 1c

IV.8.3. A brief analysis of the data findings.

The data for the NSTA Portfolio Rubric indicate that candidates have a mean score of.

Sections of Portfolio Rubric Mean Scores (N=3)	Mean 2009-2010 n = 2	Mean 2010-2011	Mean 2011-2012
Mean Portfolio Per Year	2.75	3.0	3.1

IV.8.4. An interpretation of how that data provides evidence for meeting standards

The data demonstrate that the candidates all successfully documented the NSTA standards through a variety of assessments throughout the program at an acceptable level of two (meets expectations).

IV.8.5. Attachment of assessment documentation, including:

- (a) the assessment tool or description of the assignment;**
- (b) the scoring guide for the assessment.**

NSTA Exit Portfolio Table of Contents

TOC: MED -(Initial Licensure) NSTA Standards- NCATE					
This rubric has 8 criteria that are valued on a 3 point scale with Level 1: Needs Improvement, Level 2: Meets Expectations, Level 3: Exceeds Expectations.					
	Title	Rubric for Assessment	NSTA Standards	Linked	Description
1.0	Content Knowledge Licensure Test				
1.1	Assessment of content knowledge in Physical/Earth & Life/Earth	803 Praxis II Physical/Earth and 804 Life/Earth Criterion Level Report	Content: 1.a, 1.b, 1c Nature of Science: 2a, 2b Inquiry: 3a, 3b		Upload your Praxis II tests 235 Bio Content and 571 E.S. Content & 234 Life Sci. Pedagogy score report for Life/Earth certification and 571 E.S. Content, 481 Phys Content & 483 Phys Pedagogy for Physical/Earth Certification
2.0	Assessment of General Content Knowledge in Discipline to be Taught				
2.1	Content Knowledge: 1 Content, 2 Nature of Sci., 3 Inquiry, 4 Issues, 9 Safety & Welfare	853: NSTA content Competency Assessment	Content: 1.a, 1.b, 1c, Nature of Science: 2a, 2b, Inquiry: 3a, 3b, Issues 4a, Safety & Welfare 9a, 9b, 9c, 9d		Upload your course content grid containing grades for undergraduate and graduate science courses.
3.0	Planning Instruction & Assessment				
3.1	Pedagogical & Prof Knowledge, Skills & Dispositions	1176 NSTA Unit Plan	General Teaching Skills: 5a, 5b, 5c, 5d		Upload NSTA Curriculum Unit from SCED 7201 Curriculum Design
4.0	Pedagogical & Professional Knowledge, Skills, & Dispositions				
4.1	Student Teaching Assessment Pathwise Plus	869 7106 Pathwise-based observation Univ Supervisor	Content: 1.a, 1.b, 1c, Nature of Science: 2a, 2b, Inquiry: 3a, 3b, General Teaching Skills: 5a, 5b, 5c, 5d, Curriculum: 6a, 6b, Science in the Community: 7b, Assessment: 8a, 8b, 8c, Safety & Welfare 9a, 9b, 9c, 9d		Upload observations from Student Teaching Experience 7106 b your university supervisor
4.2	Internship 7601 Pathwise Plus Assessment	142: SCEDG Internship Domain A: Planning (University Supervisor) 143: SCEDG Internship Domain B: Classroom	Content: 1.a, 1.b, 1c, Nature of Science: 2a, 2b, Inquiry: 3a, 3b, General Teaching Skills: 5a, 5b, 5c, 5d, Curriculum:		Upload observations from Internship 7601 by your university supervisor

		Management (University Supervisor) 144: SCEDG Internship Domain C: Instructional Skills (University Supervisor) 145: SCEDG Internship Domain D: Professionalism (University Supervisor)	6a, 6b, Science in the Community: 7b, Assessment: 8a, 8b, 8c, Safety & Welfare 9a, 9b, 9c, 9d, Professional Growth: 10b, 10c, 10d	
4.3	NSTA Internship Assessment: 9. Safety and Welfare	1177: NSTA SCED Internship Assessment*	Safety and Welfare: 9a, 9b, 9c, 9d	Upload your NSTA safety Standard #9.
5.0	Effects on Student Learning			
5.1	Effects on Student Learning: Student Work Sample	58: NSTA: Effect on Student Learning*	Content: 1.a, 1.b, 1c, Nature of Science: 2a, 2b, 2c, Inquiry: 3a, 3b, 3c, General Teaching Skills: 5a, 5b, 5c, 5d,5e, Curriculum: 6a, 6b, Assessment: 8a, 8b, 8c, Safety & Welfare , 9b, 9d,	Upload sample of student work from a candidate’s class being taught during the Internship. Reflection on the performance of the students and how the lesson could be modified
6.0	Legal, Safety and Ethical Issues			
6.1	NSTA Safety Quiz - Standard 9. Safety and Welfare	1178: NSTA Safety Quiz*	Safety and Welfare: 9a, 9b, 9c, 9d	Upload Safety Quiz from SCED 7202
6.2	NSTA Safety Lesson - Standard 9. Safety and Welfare	1179: NSTA Safety Lesson*	Safety and Welfare: 9a, 9b, 9c, 9d	Upload Safety Lesson from SCED 7202
7.0	Content Knowledge - Research and Investigation			
7.1	Knowledge - Research and Investigation	1180: NSTA Research and Investigation*	Content: 1.a, 1c,	Upload your documentation to demonstrate research
8.0	Content Knowledge: Contextual Content			
8.1	NSTA Virtual Field Trip	856: NSTA Inquiry Lesson-Virtual Field Trip*	Content: 1c,	Candidates are to upload the Inquiry Lesson: Virtual Field Trip
8.2	NSTA WebQuest	857: NSTA Inquiry Lesson-WebQuest*	Content: 1c,	Candidates are to upload Inquiry Lesson: WebQuest.
8.3	NSTA ISTE Matrix	865: NSTA Technology Matrix at Capstone*	Content: 1c,	Candidates are to upload the ISTE Matrix at capstone.

**IV.8.5. Attachment of assessment documentation, including:
c) Candidate data derived from the assessment.**

NSTA Exit Portfolio Assessment

Sections of Portfolio Rubric Mean Scores (N=3)	Mean 2009-2010 n=2	Mean 2010-2011 N=5	Mean 2011-2012 N=5
Licensure assessment	2.0	2.75	3.0
Assessment of content knowledge in Science	3.0	3.0	3.0
Assessment of Candidate Ability to Plan; Lesson Planning and Unit Development	2.88	2.9	3.25
Student Teaching 7106 Pathwise Plus	2.56	2.8	3.15

Internship 7601 Pathwise Plus Assessment	2.70	3.0	3.0
NSTA Internship 7601 Assessment-Safety & Welfare	na	3.52	3.31
Assessment of candidate effect on student learning	na	2.7	3.0
Legal, Safety and Ethical Issues	na	3.4	3.1
Research & Investigation * No longer required	na	na	na
Virtual Field Trip, WebQuest, Technology	3.0	3.0	3.0
Mean Portfolio Per Year	2.75	3.0	3.1

SECTION V—USE OF ASSESSMENT RESULTS TO IMPROVE CANDIDATE AND PROGRAM PERFORMANCE

(1) Content knowledge: Our program allows candidates to acquire a master’s degree along with initial licensure. Because of this we require strong content as a foundation for admission to the program. Previous to 2007 candidates were allowed admission with 18 hours of prerequisite courses to complete. Starting in the fall of 2007 candidates are required to lack no more than 12 hours of prerequisite courses. Strengthening a candidate’s knowledge base insures the candidate will pass all Praxis II Life/Earth/Physical Content. We made this decision upon analysis of Praxis II data when it was noted several candidates were able to pass the Praxis life or physical science content first time took two or three times to pass the Praxis II Earth Science Content. Candidates’ lack of earth science hours was evident in their failure to pass Earth Science Praxis. We will continue to monitor the candidates Praxis scores to see if the requirement of more earth science content as a prerequisite to program admission will eliminate the problem of passing Earth Science Praxis.

(2) Professional and pedagogical knowledge, skill, and dispositions: We have had 100% pass rate on the first time candidates take the Life or Physical Pedagogy. This is due to our focus on pedagogy based on Praxis III. Arkansas is one of the few states requiring new teachers to pass Praxis III in order to receive a permanent license. Our general instructional methods and classroom management, specialized science methods course and curriculum design all require a field co-requisite that allows candidates to put into practice the theory learned in the courses. The courses are evaluated through Pathwise which is similar to and a foundation for the Praxis III. Candidates are required to demonstrate content, planning, instruction, human relations, professionalism, research & technology, professional ethics and diversity as align with Arkansas Teacher Licensure Standards and the NSTA applicable standards in their exit portfolio.

(3) Student learning: Candidates are required to submit a student work sample during their internship that contains a pre and post test of content taught, an analysis of the test as demonstrated in a graph, a reflection as to the effectiveness of a lesson and a plan to improve teaching the lesson such as adding or deleting specific instructions or content. Beginning spring 2008, we have started collecting data on the Praxis III for our graduates since the State of Arkansas is one of only two states to adopt Praxis III as a method of assessing teacher performance and student learning during the first year of initial teacher licensure. We will collect and analyze data on our candidates. Praxis III utilizes trained assessors who have passed the ETS test battery, experienced teachers, administrators, and teacher educators who complete a one-time evaluation which includes pre-interview, classroom observation, and post-interview to determine whether the novice teacher should continue in the classroom without remediation. As data is collected, this data will be shared with colleges of teacher education to supply concrete evidence that their candidates are succeeding in the field after program completion. The Praxis

April, 2012

III is centered on student learning and successful delivery of content through instruction by the teacher.

ATTACHMENT C
Names of Programs*

Degree Level	Grades of License	Model of Program	Disciplines
Graduate	7-12	Single-field	Bio/Earth
Graduate	7-12	Dual-field	Chem, Physics/Earth