Program Report for the Preparation of Science Teachers
National Science Teachers Association (NSTA)

NATIONAL COUNCIL FOR ACCREDITATION OF TEACHER EDUCATION

COVER SHEET

1. Institution Name

Arkansas State University

2. State

Arkansas

3. Date submitted

MM DD YYYY

09 / 15 / 2008

4. Report Preparer's Information:

Name of Preparer:

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6. Name of institution's program

General Science (BSE Degree Program)

7. NCATE Category

Science Education (multiple fields)

8. Grade levels[1] for which candidates are being prepared

7-12

(1) e.g. Early Childhood; Elementary K-6

9. Program Type

- Advanced Teaching
- First teaching license
- Other School Personnel
- Unspecified

10. Degree or award level

- Baccalaureate
- Post Baccalaureate
- Master's
- Post Master's
- Specialist or C.A.S.
- Doctorate
- Endorsement only

11. Is this program offered at more than one site?

- Yes
- No

12. If your answer is "yes" to above question, list the sites at which the program is offered

13. Title of the state license for which candidates are prepared

Secondary Life/Eath and/or Secondary Physical/Earth

14. Program report status:

- Initial Review
- Response to One of the Following Decisions: Further Development Required, Recognition with Probation, or Not Nationally Recognized
- Response to National Recognition With Conditions

15. State Licensure requirement for national recognition:

NCATE requires 80% of the program completers who have taken the test to pass the applicable state licensure test for the content field, if the state has a testing requirement. Test information and data must be reported in Section III. Does your state require such a test?

- Yes
- No

SECTION I - CONTEXT

1. **Provide the following contextual information:**

Description of any state or institutional policies that may influence the application of NSTA standards. (Response limited to 4,000 characters.)

With an enrollment of approximately 10,300 students, Arkansas State University-Jonesboro (ASU-J) is the largest of the seven campuses of the Arkansas State University System. Founded in 1909 as a regional agricultural training school, ASU is the only comprehensive public university located in Northeast Arkansas. Programs at the specialist's, master's, bachelor's and associate's degree levels are available through the nine colleges of the university, and the institution offers doctoral programs in Educational Leadership, Environmental Science, Heritage Studies, and Molecular Biosciences. In the region serviced by the institution, ASU is well known for its excellent programs in teacher education.

The BSE in General Science is a secondary-level (7-12) teacher education program qualifying candidates to apply for initial licensure upon completion of the degree. It is housed in the Departments of Biological Sciences and Chemistry-Physics, in the College of Sciences and Mathematics. However, faculty members in each content area department who are responsible for teacher preparation are also members of the Professional Education Unit, and the Head of the Professional Education Unit is also the Dean of the College of Education (COE). The Departments of Biology and Chemistry/Physics are two of eleven non-COE departments of the University with teacher education programs. Thus, faculty members who are responsible for teacher preparation have the opportunity to work very closely on a regular basis with colleagues from the COE and from many other departments who have a variety of teacher education-related responsibilities within the Professional Education Unit. The Professional Education Unit has a governance system that includes all programs in the decision-making process.

1. State and Institutional Policies
The Arkansas Department of Education (ADE) regulates certification standards for public school teachers in the State of Arkansas. Upon completion of an approved program at ASU, and pursuant to successful licensure application procedures, the ADE issues an Initial License to beginning teachers. Candidates in General Science pursue certification to teach at the secondary (7-12) level only. The Professional Education Unit and its various shared-governance entities oversee policies for admission, retention, and exit from the many teacher education programs within the Unit. Committees within the Unit make decisions regarding curriculum, requirements for field experiences, Unit assessments, and all changes to teacher education programs at the elementary, mid-level and secondary levels.

Candidates for the BSE degree in General Science must complete one of the three emphasis area programs which include BSE in General Science: Biology, Chemistry, or Physics Emphasis. The Biology program is a 138-140 credit-hour program of study, including 53-55 major credit-hours in Biology, Chemistry, Physics, Mathematics, and Earth Sciences. The Chemistry program is a 126-133 credit-hour program of study, including 41-45 major credit-hours in Chemistry, Physics, Mathematics, and Earth Sciences. The Physics program is a 129-132 credit-hour program of study, including 44 major credit-hours in Physics, Chemistry, Mathematics, and Earth Sciences. All three emphasis areas require 46-49 credit-hours in general education and 33 credit-hours of professional education courses, and an additional course in health (see attachments for program checklists).

In Arkansas there are two secondary science licensure areas, Life/Earth Science and Physical/Earth Science. The ADE requires candidates for the Secondary Life/Earth License to pass three separate PRAXIS II exams: Biology: Content Knowledge, Earth Science: Content Knowledge, and Life Science: Pedagogy. Candidates for the Secondary Physical/Earth license must pass three separate PRAXIS II exams: Physical Science: Content Knowledge, Earth Science: Content Knowledge, and Physical

Science: Pedagogy.

2. Description of the field and clinical experiences required for the program, including the number of hours for early field experiences and the number of hours/weeks for student teaching or internships. (Response limited to 8,000 characters.)

Levels of Field Experience:
Field I: BSE General Science students complete two early field experiences, each of which is completed in conjunction with a required course in the program. The Field I (initial) field experience is completed as a part of SCED 2514, Introduction to Secondary School Teaching, and is supervised by the instructor of that course. This class is taken during the sophomore year, prior to the candidate's admission to the Teacher Education Program. Each candidate is assigned to an area secondary school for the equivalent of 30 clock-hours of observation and instruction-related experiences. For this initial field experience, students in the BSE program in General Science are assigned to science classrooms. A number of assignments from this class and field experience, including several field reflections, are required components of the first phase of each candidate's electronic portfolio, which is reviewed by the General Science BSE Program Coordinator at the time of application for admission to the Program.

Field II: The second early field experience of the program usually takes place during the junior year as a major component of the course SCED 3515, Performance-Based Instructional Design. Each candidate is placed with a secondary-level Science teacher in his or her classroom for at least 45 clock-hours, during which the candidate serves as an aide, tutor and assistant. Candidates also teach several classes throughout the semester, under the supervision of the classroom teacher and the university instructor of the course. Since almost all candidates take SCED 3515 concurrently with EDSC 4593, Methods and Materials for Teaching of Science in the Secondary Schools, they discuss their lessons with the Coordinator of the General Science BSE Program (who teaches the methods class) prior to teaching the lessons. In this way, the Program Coordinator can ensure that lessons are standards-based and reflect sound scientific learning principles. Lesson plans, field reflections and several other assignments from this experience must be included in each candidate's Pre-Internship Portfolio, which is submitted for review to the General Science BSE Program Coordinator.

Site Assignments for Field Experiences: In order to ensure that candidates benefit from variety and diversity in educational settings, sites selected for the three field experiences (Field I, Field II and the teaching internship) in each candidate's program must include schools that vary by size and diversity of student population. All of the available sites have been classified into three categories, according to the diversity of the student population, and schools in each category are further categorized according to size. Candidates are placed in one school site from each diversity category and must have one experience at a large school, one experience at an average-to-small school, and one experience can be at either size school.

Teaching Internship in General Science: All candidates complete a full-semester, 16-week teaching internship during their last semester at ASU, after all course work has been completed. The teaching internship requires each candidate to function in the total teaching role by maintaining and performing all functions and activities normally performed by the clinical supervisor. The intern gradually assumes responsibility for the classroom and takes on full responsibility for all classes for no less than 3 weeks for an 8-week placement and no less than 4 weeks for a 16-week placement. In addition to all duties and responsibilities associated with teaching classes and working with students at the internship site, candidates must complete several other assignments and include them in their electronic Internship Portfolio. These assignments include the variety of tasks included in the NSTA Portfolio(See Assessment 7), a research-based project to assess teacher effectiveness (See Assessment 5), field reflections, and the creation of the Internship Portfolio.

The university supervisor of the internship is the Coordinator of the General Science BSE program. He is currently the only faculty member in the Department specializing in Science Education; he has a Ed.D. in Curriculum and Instruction Leadership with emphasis in Science Education, 13 years of experience teaching Science at the secondary level, and a record of ongoing participation and leadership in the field at the state, regional and national level.

The university supervisor makes a minimum of four observation visits to each intern's site, two announced and two unannounced. An observation visit includes a brief pre-conference with the intern (when possible), followed by the observation of the intern's teaching, a post-conference with the intern, and a post-conference with the clinical supervisor. Whenever possible, a three-way post-conference takes place, with both the intern and the clinical supervisor meeting with the university supervisor at the same time. For each visit, a formative assessment form structured according to the Conceptual Framework of the ASU Teacher Education Program is completed by the university supervisor and discussed with the intern. The clinical supervisor is responsible for completing and discussing four separate observations using the same forms at other times when the university supervisor is not necessarily present. These forms must be turned in to the university supervisor, who reviews them and may choose to consult with the clinical supervisor about them. The final, summative evaluation is used along with the intern's electronic Internship Portfolio to determine the intern's final grade for the teaching internship.

Selection of Internship Sites and Clinical Supervisors: Sites are selected from Higher Learning Commission / North Central Association (NCA) schools (must have accreditation) that agree to participate in the preparation of teachers and that provide appropriate instructional and physical resources for the teaching internship. Sites must be located within a 60-mile radius of the ASU-Jonesboro campus. Interns are not placed in a school in the school district from which they graduated nor in any school in which they completed a previous field experience. The decision to place a teacher intern in a given school setting is a cooperative agreement in which the school principal, the clinical supervisor, the university supervisor and the Coordinator of Teaching Internship and Field Experiences must all give consent. Clinical supervisors must hold a degree, preferably a master's degree, be licensed to teach Science, and must have a minimum of three years of teaching experience teaching science. The Office of Professional Education Programs, headed by the Coordinator of Teaching Internships and Field Experiences, works collaboratively with the university supervisor/Coordinator of the General Science BSE program to use the above-mentioned diversity classification of field experience sites to plan each candidate's series of field experiences. The university supervisor is very familiar with the teaching styles and abilities of the clinical supervisors with whom each intern could be placed and is able to request placement with the clinical supervisor whose background and work best meet the needs of the intern.

3. Description of the criteria for admission, retention, and exit from the program, including required GPAs and minimum grade requirements for the content courses accepted by the program. (Response limited to 4,000 characters.)

Admission into the Teacher Education program requires students to score a minimum score of 172 on the mathematics, 173 on the writing and 171 on the mathematics batteries of the Pre-professional Skills Test (PPST). Candidates are also required to have a minimum GPA in all coursework of 2.5 and have at least a grade of "C" in ENG 1003 Freshman English I, ENG 1013 Freshman English II, MATH 1023 College Algebra, ECH/MLED 2002 Intro to Educational Technology, ECH/MLED 2022 Introduction to Teaching or SCED2514 Introduction to Secondary Teaching, and SCOM 1203 Oral Communications or their equivalents from another university/college. Candidates are only eligible after completing a minimum of 30 semester hours. Furthermore, they must complete an evaluation of Career Decision Awareness and they must also submit their philosophy of education. Finally, candidates are interviewed

by a committee of faculty to insure that they meet admission criteria.

In order to remain in good standing in the Teacher Education Program, candidates must maintain a grade point average of 2.5 (minimum 3.0 grade point average in all course work required for Program of Study candidates) and earn a minimum of "C" on all professional education courses.

Candidates must meet the following performance requirements in order to be validated for teaching internship:
1. Be admitted into the teacher education program
2. Senior standing with a minimum of 90 semester hours
3. Completion of all professional education/major courses with the exception of the teaching internship courses.
4. Attain a minimum grade point average of 2.5 in all course work and a minimum grade point average of 2.5 in the major area (minimum 3.0 grade point average in all course work required for Program of Study candidates and a minimum of a 3.0 grade point average in the major area)
5. A medical examination report must be presented at the time of application
6. Attend the orientation sessions for the teaching internship
7. Verification of no conviction of a felony or other crimes specified in Arkansas Code Act 1310 of 1995 and Act 1313 of 1997.

In order to complete the program, candidates must successfully complete their teaching internship. The teaching internship requires the candidate to function in the total teaching role by maintaining and performing all functions and activities normally performed by the clinical supervisor. The intern assumes these activities for no less than 3 weeks for an 8-week placement and no less than 4 weeks for a 16-week placement. During the teaching internship the candidate is also required to keep an electronic portfolio. Finally, the teaching internship requires candidates to complete the Praxis II exams for the secondary science license that they are pursuing: Biology: Content Knowledge, Earth Science: Content Knowledge, and Life Science: Pedagogy for the Life/Earth Science License and Physical Science: Content Knowledge, Earth Science: Content Knowledge, and Physical Science: Pedagogy for the Physical/Earth Science License.

4. Description of the relationship of the program to the unit's conceptual framework[2]. (Response limited to 4,000 characters.)

Current thinking reflects a focus upon individuality and contextuality to a degree not found in earlier views of education. Greater awareness of diversity and the growing need to respond to diversity issues in a manner that allows greater incorporation of disparate groups into society's mainstream has become a major focus of society. Juxtaposed with these cultural concerns, psychological and biological research efforts are unlocking the structures and processes of the brain. Growing understanding of the links between learning, the environment, and human growth will demand greater educational responsiveness to the individual and individual needs.

In response, the BSE General Science Program at Arkansas State University is building upon the solid research base of the emerging professional educator, these outcomes reaffirm the need for understanding the foundations of society while also affirming the need to respond to society's growing complexity. Viewed as transitional, these outcomes reflect an intermediate stage in program development by providing greater clarity to the intentions of the program in relation to its students. However, further exploration and reflection will lead to a greater refinement of program outcomes which will produce a better integration of students into society and a greater alignment with developing professional standards. With the understanding that the initial level of preparation is the beginning of the personal

and professional formation of an educator, the theme for our conceptual framework is Learning to teach, Teaching to learn. Our strong relationship with clinical supervisors and public schools enables us to cooperatively work toward assisting candidates develop the skills, knowledge and dispositions identified in our conceptual framework.

(2) The response should describe the program's conceptual framework and indicate how it reflects the unit's conceptual framework

5. Indication of the unique set of program assessments for science and their relationship of the program's assessments to the unit's assessment system[3]. (Response limited to 4,000 characters.)

All key assessments in the BSE-General Science program are unique to the science program and are implemented in courses required of all candidates. The assessments and rubrics are consistent with and supplement the College of Education's system of assessment which focuses on planning and preparation, classroom dispositions, instruction, and professional responsibility.
There are eight assessments for the BSE-General Science program four (1,2,7,8) are designed to assess the science content knowledge and processes of candidates. The assessments titled "Content Knowledge", "Grades-GPA" and "Scientific Research Project/Report" are specifically designed to assess the candidate's ability to do and explain scientific concepts. NSTA standards state that a candidate should be effective in planning and executing instruction by having a thorough knowledge of scientific content and must be able to use the processes of science which have been identified in the National Science Teachers Association. These assessments are well-aligned with and supplement the College of Education's assessment system, thus ensuring that all candidates have had sufficient exposure to NSTA-aligned curriculum.

The other four program assessments (3, 4,5, 6) are linked to candidate performance either through the Secondary Science Methods course or the candidates on-line portfolio along with the Science Lab Safety Training Module. The portfolio is developed as an ongoing project beginning in the first field experience and continuing through the internship semester. Each semester the candidates participate in a professional education course, they enter artifacts into the portfolio that are used to assess their ability to plan instruction, their dispositions toward teaching, and their overall readiness for the profession. The portfolio is assessed throughout the program with the final product being evaluated as Assessment #8. Assessment #3 is evaluated through the portfolio in Secondary Science Methods semester, while Assessment #5 is evaluated at the end of the student internship semester. Assessment 7 addresses the candidate's ability to conduct scientific research and is evaluated during the science content course for which the project is an assignment. Assessment 6 is evaluated at the completion of the Science Lab Safety Training Module, usually during the semester prior to the Teacher Internship semester. The rubric used for assessments 3, 4, 5, 7, & 8 are consistent with the College of Education suggested levels with 1-unacceptable, 2-acceptable and 3-target. Each of these assessments allows the program to evaluate candidates' abilities at the beginning of the program to effectively plan and implement instruction and to assess student learning.

(3) This response should clarify how the key assessments used in the program are derived from or informed by the assessment system that the unit will address under NCATE Standard 2.

6. This system will not permit you to include tables or graphics in text fields. Therefore any tables or charts must be attached as files here. The title of the file should clearly indicate the content of the file. Word documents, pdf files, and other commonly used file formats are acceptable. The system will not accept .docx files. Please include all information on an assessment (directions, scoring guide, data, and reflections on changes) in a single document. Note that if using MS Word, files must be in a version prior to MS Vista.

7. Attach the following contextual information:

1. A program of study that outlines the courses and experiences required for candidates to complete the program. The program of study must include course titles and numbers. (This information may be provided as an attachment from the college catalog or as a student advisement sheet.) AND forms showing requirements for science content courses for post degree or master's programs. Syllabi and course descriptions are not generally necessary (some exceptions may be in Assessment #2, the Content Analysis form). Please include directions for each level of candidate (e.g., undergradtuate advising sheet and post degree or graduate advising sheet.)
(Response limited to 6 pages)

Program of Study for each of the BSE General Science Emphasis areas	Physics Emphasis
Biology Emphasis	

See **Attachments** panel below.

8. Candidate Information

Directions: Provide three years of data on candidates enrolled in the program and completing the program, beginning with the most recent academic year for which numbers have been tabulated. Report the data separately for the levels/tracks (e.g., baccalaureate, post-baccalaureate, alternate routes, master's, doctorate) being addressed in this report. Report the data separately for each licensure area (e.g., chemistry, biology, broad field science, middle level). Data must also be reported separately for programs offered at multiple sites. Update academic years (column 1) as appropriate for your data span. Create additional tables as necessary.

Program: BSE General Science with one of the following emphasis--Biology, Chemistry, or Physics		
Academic Year	# of Candidates Enrolled in the Program	# of Program Completers[4]
2005-06	29	6
2006-07	18	6
2007-08	10	0

(4) NCATE uses the Title II definition for program completers. Program completers are persons who have met all the requirements of a state-approved teacher preparation program. Program completers include all those who are documented as having met such requirements. Documentation may take the form of a degree, institutional certificate, program credential, transcript, or other written proof of having met the program's requirements.

9. Faculty Information

Directions: Complete the following information for each faculty member responsible for science education professional coursework, clinical supervision, or administration in this program. This may be the science educator(s) or others directly involved in teaching science education portion of the licensure program.

Faculty Member Name	J Tillman Kennon
Highest Degree, Field, & University[5]	Ed.D Instruction and Curriculum Leadership: Science Education Emphasis University of Memphis, Memphis, TN
Assignment: Indicate the role of the faculty member[6]	Faculty(Department of Chemistry and Physics), Director of Science Education, Supervisor of Teacher Interns, Academic Advisor
Faculty Rank[7]	Associate Professor
Tenure Track	þ YES

Scholarship[8], Leadership in Professional Associations, and Service[9]:List up to 3 major contributions in the past 3 years[10]	President of the Arkansas Science Teachers Association--2005 Kennon, J.T., E. Roberts, & T.K. Fuller. (2008) Students at the Edge of Space. The Science Teacher. Volume: 75. January 2008. Kennon, J.T. (2007). Recycling aluminum cans in the lab: two inexpensive inquiry activities. Science Scope. Volume: 30 February 2007.
Teaching or other professional experience in P-12 schools[11]	High School science teacher for 13 years; still hold licensure in 7-12 Science (both life/earth and physical/earth science) in the state of Arkansas; serve as supervisor of teacher interns each semester; conduct workshops each summer for in-service teachers.

Faculty Member Name	John M. Pratte
Highest Degree, Field, & University[5]	Ph.D., Physics, University of Colorado
Assignment: Indicate the role of the faculty member[6]	Chair and Professor of Physics
Faculty Rank[7]	Professor
Tenure Track	þ YES
Scholarship[8], Leadership in Professional Associations, and Service[9]:List up to 3 major contributions in the past 3 years[10]	SENCER National Leadership Fellow "Students on the Edge of Space", Sencer SSI 2008. San Jose, CA, August 10, 2008; SENCER National
Teaching or other professional experience in P-12 schools[11]	Conducted workshops for in-service teachers.

Faculty Member Name	Aldemaro Romero
Highest Degree, Field, & University[5]	Ph.D., Biology, University of Miami
Assignment: Indicate the role of the faculty member[6]	Biological Sciences Department Chair. I teach some courses taken by teachers and I am the direct supervisor of the person in charge of the Science Education program at my department.
Faculty Rank[7]	Chair and Professor
Tenure Track	þ YES
Scholarship[8], Leadership in Professional Associations, and Service[9]:List up to 3 major contributions in the past 3 years[10]	Society for Marine Mammalogy (Member of the Education Committee, 1999-current) .
Teaching or other professional experience in P-12 schools[11]	none

Faculty Member Name	Martin Huss
Highest Degree, Field, & University[5]	Ph.D, Biology, University of Kansas
Assignment: Indicate the role	Teaching. research, advisor for BSE General Science: Biology Majors

of the faculty member[6]	
Faculty Rank[7]	Associate Professor of Biology
Tenure Track	þ YES
Scholarship[8], Leadership in Professional Associations, and Service[9]:List up to 3 major contributions in the past 3 years[10]	Lee, K. -M., D. F. Gilmore, and M. J. Huss. 2005. Fungal degradation of the bioplastic PHB (poly- 3-hydroxybutyric acid). J. Polym. Environ. 13: 213-219. Arkansas Science Expedition. Arkansas Conference on Teaching. Little Rock, Arkansas. 2-3 November 2005. with J. Kennon.
Teaching or other professional experience in P-12 schools[11]	One year teaching experience. Present summer workshops for K-12 teachers

(5) e.g., PhD in Curriculum & Instruction, University of Nebraska.
(6) e.g., faculty, clinical supervisor, department chair, administrator
(7) e.g., professor, associate professor, assistant professor, adjunct professor, instructor
(8) Scholarship is defined by NCATE as systematic inquiry into the areas related to teaching, learning, and the education of teachers and other school personnel.
Scholarship includes traditional research and publication as well as the rigorous and systematic study of pedagogy, and the application of current research findings in new settings. Scholarship further presupposes submission of one's work for professional review and evaluation.
(9) Service includes faculty contributions to college or university activities, schools, communities, and professional associations in ways that are consistent with the institution and unit's mission.
(10) e.g., officer of a state or national association, article published in a specific journal, and an evaluation of a local school program.
(11) Briefly describe the nature of recent experience in P-12 schools (e.g. clinical supervision, inservice training, teaching in a PDS) indicating the discipline and grade level of the assignment(s). List current P-12 licensure or certification(s) held, if any.

SECTION II - LIST OF ASSESSMENTS

1. In this section, list the 6-8 assessments that are being submitted as evidence for meeting the NSTA standards. All programs must provide a minimum of six assessments. If your state does not require a state licensure test in the content area, you must substitute an assessment that documents candidate attainment of content knowledge in #1 below. For each assessment, indicate the type or form of the assessment and when it is administered in the program.

Type and Number of Assessment	Name of Assessment (12)	Type or Form of Assessment (13)	When the Assessment Is Administered (14)
Assessment #1: Content Knowledge – Licensure Tests [15](required)	Praxis II-Content Knowledge	State licensure exams of science content	Most Students take the exam during Field Experience III
Assessment #2: Content Knowledge – an assessment of general content knowledge in discipline to be taught (required)	Assessment of Content Knowlegde-Science Course Sequences	Grades in required science courses within the emphasis program of study and overall GPA	Ongoing throughout the program
Assessment #3: Pedagogical and Professional Knowledge, Skills and Dispositions – Planning instruction and assessment (required)	Unit of Instruction	Project to determine ability of candidate to plan instruction assessed through online portfolio	Assessed during the Methods and Materials for Teaching of Science in the Secondary Schools Course
Assessment #4: Pedagogical and	Faculty Supervisor		

Professional Knowledge, Skills and Dispositions – Student Teaching Assessment (required)	and Clinical Supervisor Assessment of the Teacher Intern (Field III) Experience	Performance-Based	Conclusion of Field Experience III Semester
Assessment #5: Effects on Student Learning (required)	Proof of Teacher Effectiveness Assessment	Research-based assessment completed by intern	Field Experience III Semester
Assessment #6: [Pedagogical and Professional Knowledge, Skills and Dispositions – Legal/Safety/Ethical Issues (required)	Science Lab Safety Training Module	Six hour science lab safety training module that must be successfully completed before the Field Experiene III	Must be completed no later than the semester before the Field Experience III
Assessment#7: Content Knowledge – Research & Investigation (required)	Scientific Research Projects embedded in content science courses	Assessment by science faculty in science content courses selected for research project assignments	Assessed at the conclusion of Methods and Materials for Teaching of Science in the Secondary Schools Course and by science faculty in science content courses selected for research project assignments
Assessment #8: Content Knowledge – Contextual Content (required)	Teacher Internship Portfolio	Assessed by the University Supervisor using a Target, Acceptable, Unacceptable scoring rubric	Must be completed no later than the semester before the Field Experience III

(12) Identify assessment by title used in the program; refer to Section IV for further information on appropriate assessment to include.
(13) Identify the type of assessment (e.g., essay, case study, project, comprehensive exam, reflection, state licensure test, portfolio).
(14) Indicate the point in the program when the assessment is administered (e.g., admission to the program, admission to student teaching/internship, required courses [specify course title and numbers], or completion of the program).
(15) If licensure test data is submitted as Assessment #1, the assessment and scoring guide attachments are not required. If the state does not require a licensure test, another content based assessment must be submitted (including the assessment and scoring guide).

SECTION III - RELATIONSHIP OF ASSESSMENT TO STANDARDS

For each NSTA standard on the chart below, identify the assessment(s) in Section II that address the standard. One assessment may apply to multiple NSTA standards.

1. NSTA Standards[16] [17]

Content. Teachers of science understand and can articulate the knowledge and practices of contemporary science. They can interrelate and interpret important concepts, ideas, and applications in their fields of licensure; and can conduct scientific investigations. To show that they

are prepared in content, teachers of science must demonstrate that they

	#1	#2	#3	#4	#5	#6	#7	#8
(a) understand and can successfully convey to students the major concepts, principles, theories, laws, and interrelationships of their fields of licensure and supporting fields as recommended by the National Science Teachers Association	ϐ	ϐ	ϐ	ϐ	ϐ	ϵ	ϵ	ϐ
(b) understand and can successfully convey to students the unifying concepts of science delineated by the National Science Education Standards;	ϵ	ϵ	ϐ	ϐ	ϐ	ϵ	ϵ	ϐ
(c) understand and can successfully convey to students important personal and technological applications of science in their fields of licensure;	ϵ	ϐ	ϐ	ϐ	ϐ	ϵ	ϵ	ϐ
(d) understand research and can successfully design, conduct, report evaluate investigations in science	ϵ	ϐ	ϵ	ϵ	ϵ	ϐ	ϵ	ϵ
(e) and understand and can successfully use mathematics to process and report data, and solve problems, in their field(s) of licensure.	ϵ	ϐ	ϵ	ϵ	ϵ	ϐ	ϵ	ϵ

(16) NCATE will provide a link to the full set of SPA standards, including indicators/elements/dimensions and supporting explanations.
(17) 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.

2. Nature of Science. Teachers of science engage students effectively in studies of the history, philosophy, and practice of science. They enable students to distinguish science from nonscience, understand the evolution and practice of science as a human endeavor, and critically analyze assertions made in the name of science. To show they are prepared to teach the nature of science, teachers of science must demonstrate that they:

	#1	#2	#3	#4	#5	#6	#7	#8
(a) understand the historical and cultural development of science and the evolution of knowledge in their discipline;	ϵ	ϵ	ϐ	ϐ	ϵ	ϵ	ϵ	ϐ
(b) understand the philosophical tenets, assumptions, goals, and values that distinguish science from technology and from other ways of knowing the world;	ϵ	ϵ	ϐ	ϐ	ϵ	ϵ	ϵ	ϐ
(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	ϵ	ϵ	ϐ	ϵ	ϐ	ϵ	ϵ	ϵ

3. Inquiry. Teachers of science engage students both in studies of various methods of scientific inquiry and in active learning through scientific inquiry. They encourage students, individually and collaboratively, to observe, ask questions, design inquiries, and collect and interpret data in order to develop concepts and relationships from empirical experiences. To show that they are prepared to teach through inquiry, teachers of science must demonstrate that they:

	#1	#2	#3	#4	#5	#6	#7	#8
(a) understand the processes, tenets, and assumptions of multiple methods of inquiry leading to scientific knowledge;	ϵ	ϵ	ϐ	ϵ	ϵ	ϵ	ϵ	ϐ
(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.	ϵ	ϵ	ϐ	ϐ	ϵ	ϵ	ϵ	ϵ

4. Issues. Teachers of science recognize that informed citizens must be prepared to make decisions and take action on contemporary science- and technology-related issues of interest to the general society. They require students to conduct inquiries into the factual basis of such issues and to assess possible actions and outcomes based upon their goals and values. To show that they are prepared to engage students in studies of issues related to science, teachers of science must demonstrate that they:

	#1	#2	#3	#4	#5	#6	#7	#8
(a) understand socially important issues related to science and technology in their field of licensure, as well as processes used to analyze and make decisions on such issues;	ϵ	þ	þ	ϵ	ϵ	ϵ	ϵ	ϵ
(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.	ϵ	ϵ	þ	ϵ	þ	ϵ	ϵ	þ

5. General Skills of Teaching. Teachers of science create a community of diverse learners who construct meaning from their science experiences and possess a disposition for further exploration and learning. They use, and can justify, a variety of classroom arrangements, groupings, actions, strategies, and methodologies. To show that they are prepared to create a community of diverse learners, teachers of science must demonstrate that they

	#1	#2	#3	#4	#5	#6	#7	#8
(a) vary their teaching actions, strategies, and methods to promote the development of multiple student skills and levels of understanding;	ϵ	ϵ	ϵ	þ	ϵ	ϵ	ϵ	þ
(b) successfully promote the learning of science by students with different abilities, needs, interests, and backgrounds;	ϵ	ϵ	ϵ	þ	ϵ	ϵ	ϵ	þ
(c) successfully organize and engage students in collaborative learning using different student group learning strategies;	ϵ	ϵ	ϵ	þ	ϵ	ϵ	ϵ	þ
(d) successfully use technological tools, including but not limited to computer technology, to access resources, collect and process data, and facilitate the learning of science;	ϵ	ϵ	ϵ	ϵ	ϵ	ϵ	ϵ	þ
(e) understand and build effectively upon the prior beliefs, knowledge, experiences, and interests of students; and	ϵ	ϵ	ϵ	ϵ	ϵ	ϵ	ϵ	þ
(f) create and maintain a psychologically and socially safe and supportive learning environment.	ϵ	ϵ	ϵ	þ	ϵ	ϵ	ϵ	þ

6. Curriculum. Teachers of science plan and implement an active, coherent, and effective curriculum that is consistent with the goals and recommendations of the National Science Education Standards. They begin with the end in mind and effectively incorporate contemporary practices and resources into their planning and teaching. To show that they are prepared to plan and implement an effective science curriculum, teachers of science must demonstrate that they:

	#1	#2	#3	#4	#5	#6	#7	#8
(a) understand the curricular recommendations of the National Science Education Standards, and can identify, access, and/or create resources and activities for science education that are consistent with the standards;	ϵ	ϵ	þ	ϵ	þ	ϵ	ϵ	þ
(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.	ϵ	ϵ	þ	ϵ	ϵ	ϵ	ϵ	þ

7. Science in the Community. Teachers of science relate their discipline to their local and regional communities, involving stakeholders and using the individual, institutional, and natural resources of the

community in their teaching. They actively engage students in science-related studies or activities related to locally important issues. To show that they are prepared to relate science to the community, teachers of science must demonstrate that they:

	#1	#2	#3	#4	#5	#6	#7	#8
(a) identify ways to relate science to the community, involve stakeholders, and use community resources to promote the learning of science;	ė	ė	þ	ė	ė	ė	ė	ė
(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.	ė	ė	þ	ė	þ	ė	ė	ė

8. Assessment. Teachers of science construct and use effective assessment strategies to determine the backgrounds and achievements of learners and facilitate their intellectual, social, and personal development. They assess students fairly and equitably, and require that students engage in ongoing self-assessment. To show that they are prepared to use assessment effectively, teachers of science must demonstrate that they:

	#1	#2	#3	#4	#5	#6	#7	#8
(a) use multiple assessment tools and strategies to achieve important goals for instruction that are aligned with methods of instruction and the needs of students;	ė	ė	þ	þ	ė	ė	ė	þ
(b) use the results of multiple assessments to guide and modify instruction, the classroom environment, or the assessment process;	ė	ė	þ	þ	ė	ė	ė	þ
(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.	ė	ė	þ	þ	ė	ė	ė	þ

9. Safety and Welfare. Teachers of science organize safe and effective learning environments that promote the success of students and the welfare of all living things. They require and promote knowledge and respect for safety, and oversee the welfare of all living things used in the classroom or found in the field. To show that they are prepared, teachers of science must demonstrate that they:

	#1	#2	#3	#4	#5	#6	#7	#8
(a) understand the legal and ethical responsibilities of science teachers for the welfare of their students, the proper treatment of animals, and the maintenance and disposal of materials;	ė	ė	þ	þ	ė	þ	ė	þ
(b) know and practice safe and proper techniques for the preparation, storage, dispensing, supervision, and disposal of all materials used in science instruction;	ė	ė	þ	þ	ė	þ	ė	þ
(c) know and follow emergency procedures, maintain safety equipment, and ensure safety procedures appropriate for the activities and the abilities of students;	ė	ė	ė	þ	ė	þ	ė	ė
(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.	ė	ė	ė	þ	ė	þ	ė	ė

NOTE: A program must meet Standard 9a, b and c in order to receive either National Recognition or National Recognition with Conditions. Evidence must be shown in assessment 4 and assessment 6. Further information is available at the following URL: www.nsta.org/preservice"

10. Professional Growth. Teachers of science strive continuously to grow and change, personally and professionally, to meet the diverse needs of their students, school, community, and profession. They have

a desire and disposition for growth and betterment. To show their disposition for growth, teachers of science must demonstrate that they:

	#1	#2	#3	#4	#5	#6	#7	#8
(a) engage actively and continuously in opportunities for professional learning and leadership that reach beyond minimum job requirements;	ϵ	ϵ	ϵ	b	ϵ	ϵ	ϵ	b
(b) reflect constantly upon their teaching and identify ways and means through which they may grow professionally;	ϵ	ϵ	ϵ	b	ϵ	ϵ	ϵ	b
(c) use information from students, supervisors, colleagues and others to improve their teaching and facilitate their professional growth;	ϵ	ϵ	ϵ	b	b	ϵ	ϵ	b
(d) interact effectively with colleagues, parents, and students; mentor new colleagues; and foster positive relationships with the community.	ϵ	ϵ	ϵ	b	ϵ	ϵ	ϵ	b

SECTION IV - EVIDENCE FOR MEETING STANDARDS

DIRECTIONS: The 6-8 key assessments listed in Section II must be documented and discussed in Section IV. The assessments must be those that all candidates in the program are required to complete and should be used by the program to determine candidate proficiencies as expected in the program standards. Assessments and scoring guides should be aligned with the SPA standards. This means that the concepts in the SPA standards should be apparent in the assessments and in the scoring guides to the same depth, breadth, and specificity as in the SPA standards.

In the description of each assessment below, the SPA has identified potential assessments that would be appropriate. Assessments have been organized into the following three areas that are addressed in NCATE's unit standard 1:

- Content knowledge (Assessments 1 and 2)
- Pedagogical and professional knowledge, skills and dispositions (Assessments 3 and 4)
- Focus on student learning (Assessment 5)

Note that in some disciplines, content knowledge may include or be inextricable from professional knowledge. If this is the case, assessments that combine content and professional knowledge may be considered "content knowledge" assessments for the purpose of this report.

For each assessment, the compiler should prepare a document that includes the following items: a two page narrative that responds to questions 1, 2, 3, and 4 (below) and the three items listed in question 5 (below). This document should be attached as directed.

1. A brief description of the assessment and its use in the program (one sentence may be sufficient);
2. A description of how this assessment specifically aligns with the standards it is cited for in Section III. Cite SPA standards by number, title, and/or standard wording.
3. A brief analysis of the data findings;
4. An interpretation of how that data provides evidence for meeting standards, indicating the specific SPA standards by number, title, and/or standard wording; and
5. Attachment of assessment documentation, including:
(a) the assessment tool or description of the assignment;
(b) the scoring guide for the assessment; and
(c) candidate data derived from the assessment.

It is preferred that the response for each of 5a, 5b, and 5c (above) be limited to the equivalent of five text pages, however in some cases assessment instruments or scoring guides may go beyond five

pages.

All three components of the assessment (as identified in 5a-c) must be attached, with the following exceptions: (a) the assessment tool and scoring guide are not required for reporting state licensure data, and (b) for some assessments, data may not yet be available.

1. CONTENT KNOWLEDGE: Data from licensure tests of content knowledge in science education. If your state does not require licensure tests in the content area, data from another assessment must be presented to document candidate attainment of content knowledge. The NSTA standard that could be addressed by this assessment includes, but is not limited to, Standard 1a.

Provide assessment information (items 1-5) as outlined in the directions for Section IV

1. The names of all licensure tests or professional examinations required by the state for content and pedagogical or professional knowledge. [18]
2. Description of the alignment between licensure test data and applicable NSTA standards. However, if the test is a science content Praxis II test, the alignment is not required (e.g., Praxis II 20235: Biology Content).
3. Aggregated pass rates for each year over the past 3 years, including the most recent academic year. [19] Data must be presented on all completers, even if there were fewer than 10 test takers during a single year. Eighty percent of program completers [20] who have taken the **content** test must pass the applicable state licensure test if the state has such a test.
4. The mean and range of sub-scores for the most recent academic year.
5. A single attachment of assessment documentation, including :

(a) the assessment tool or description of the assignment;
(b) the scoring guide for the assessment; and
(c) candidate data derived from the assessment.

Data should be in aggregate form (not scores for each candidate) and disaggregated by licensure area (biology, chemistry, middle school, etc) and by program (undergraduate, post degree, masters of teaching).

(d) reflections on any rubric changes and why those changes occurred may be included here.

The narrative section for each assessment (1-5 above) is limited to two text pages. If the attachment exceeds the file size limit by NCATE, break the attachment into logical parts.

Assessment 1-Content Knowledge

See **Attachments** panel below.

(18) For example, Praxis II Biology: Content Knowledge.
(19) NCATE will provide a link to a sample response for this requirement.
(20) NCATE uses the Title II definition for program completers. Program completers are persons who have met all the requirements of a state-approved teacher preparation program. Program completers include all those who are documented as having met such requirements. Documentation may take the form of a degree, institutional certificate, program credential, transcript, or other written proof of having met the program's requirements.

2. CONTENT KNOWLEDGE: An assessment that demonstrates candidate knowledge of the conceptual science to be taught and related fields. An assessment that demonstrates that candidates are well prepared in the breadth of knowledge needed to teach in their fields of licensure. The NSTA standard that could be addressed by this assessment includes, but is not limited to, Standard 1a.

Assessments could include content grade point averages and minimum grade requirements, portfolio requirements, or comprehensive examinations suitable for preparing teachers of a curriculum based on the content recommendations in the 2003 NSTA Standards 1a.

Provide assessment information (items 1-5) as outlined in the directions for Section IV in a single attachment

Assessment 2 GPA-Grades

See **Attachments** panel below.

3. PEDAGOGICAL AND PROFESSIONAL KNOWLEDGE, SKILLS, AND DISPOSITIONS:
An assessment that demonstrates candidates can plan effective classroom-based instruction, and design assessments, consistent with goals of the National Science Education Standards. NSTA standards that could be addressed by this assessment include, but are not limited to, standards 1a, 1b, 1c, 2c, 3b, 4b, 6, 7b, and 8.
A minimum indicator might include performance in the design of at least one major demonstration teaching unit (not a single lesson plan) aligned with goals as reflected in breadth of NSTA standards 1a-c, 2c, 3b, 4b, 6, 7b, and 8 (with lesson plans and varied assessments).

Provide assessment information (items 1-5) as outlined in the directions for Section IV

A minimum indicator might include performance in the design of at least one major demonstration teaching unit (not just a single lesson plan) that includes requirements for activities addressing unifying concepts, nature of science, inquiry, issues, personal and technological applications, and science in the community (with lesson plans and varied assessments).

Provide assessment information (items 1-5) as outlined in the directions for Section IV in a single attachment

Assessment 3 Unit Plan

See **Attachments** panel below.

4. PEDAGOGICAL AND PROFESSIONAL KNOWLEDGE, SKILLS, AND DISPOSITIONS:
Assessment that demonstrates candidates' knowledge, skills, and dispositions are applied effectively in practice. NSTA standards that could be addressed by this assessment include, but are not limited to, standard 9. The assessment instrument used in student teaching and the internship should be submitted.

An indicator could include performances on a subset of items from a student teaching observation form with each area of safety addressed explicitly: 9a- Legal and ethical, 9b – Safety procedures, 9c – Chemical use and storage and 9d – Use and care of animals.

NOTE: Safety is the most important part of learning to be a science teacher. Therefore, this assessment must explicitly address all aspects of the standard for a program with enough substance to ensure to external reviewers that preservice teachers are prepared and are able to address in student teaching in all areas of safety in the teaching of science.

Provide assessment information (items 1-5) as outlined in the directions for Section IV

An indicator could include performance in an internship that is evaluated using an observation form filled out by the cooperating teacher and supervisor.

Provide assessment information (items 1-5) as outlined in the directions for Section IV in a single attachment

Teacher Internship Assessment 4

See **Attachments** panel below.

5. EFFECTS ON STUDENT LEARNING: An assessment that demonstrates candidate effects on student learning of major concepts, principles, theories, laws; the unifying concepts of science; the nature of science; the practice of inquiry (including student engagement in inquiry); analysis of issues related to science and technology and the impact of science on themselves and their community. NSTA standards that must be addressed by this assessment include, but are not limited to, standards 1a, 2c, 3b and 4b.

An indicator might include an assessment of candidate on work samples aligned that is specific to science and explicitly evaluates each of the standards above. Work samples may include pre and post test data with analysis and reflections.

Provide assessment information (items 1-5) as outlined in the directions for Section IV in a single attachment

Section IV Assessment 5.pdf

See **Attachments** panel below.

6. PEDAGOGICAL AND PROFESSIONAL KNOWLEDGE, SKILLS, AND DISPOSITIONS: An assessment that demonstrates candidates are prepared in legal issues, safety, and ethical treatment of living things. The NSTA standard addressed by this assessment includes, but is not limited to, standard 9.

Assessments might include performance in a safety module with minimum levels of performance in each of the areas: 9a, 9b, 9c and 9d. This assessment must address safety knowledge and understanding that a science teacher needs to know and be able to do.
NOTE: Safety is the most important part of learning to be a science teacher. Therefore, this assessment must clearly address all aspects of the standard for a program with enough substance to ensure to external reviewers that preservice teachers are prepared in all areas of safety in the teaching of science.

Provide assessment information (items 1-5) as outlined in the directions for Section IV

Assessment 6 Safety Module

See **Attachments** panel below.

7. CONTENT KNOWLEDGE: An assessment that demonstrates knowledge of research and

investigation in science. Candidates understand multiple forms of scientific inquiry; can design, conduct, and report research in their field; and can use mathematics and appropriate technology to collect, process, and explain data. NSTA standards that could be addressed by this assessment include, but are not limited to, standards 1d-e.

Assessments might include performance in or on a science content thesis, science research project, occupational experience in scientific research, or some similar confirmed experiences in the design of research in science, with criteria aligned with requirements of this assessment. This includes the candidate designing the experiment, collecting the data, analyzing the data and reporting on the data.

Provide assessment information (items 1-5) as outlined in the directions for Section IV

Assessment 7 Scientific Research Project

See **Attachments** panel below.

8. CONTENT KNOWLEDGE: An assessment that demonstrates knowledge of the contextual content of science. An assessment that demonstrates candidates have a strong understanding of the socially relevant issues, social context, unifying concepts, inquiry, history, philosophy and applications of science. NSTA standards addressed by this assessment include, but are not limited to, 1b, 2a-b, 3a, and 4a.

Assessments might include performance in a course specifically designed to cover these topics, or performance on a portfolio subset with requirements specifically demonstrating preparation in the knowledge identified in this assessment.

Provide assessment information (items 1-5) as outlined in the directions for Section IV in the directions for Section IV in a single attachment

Assessment 8 Teacher Internship Portfolio

See **Attachments** panel below.

SECTION V - USE OF ASSESSMENT RESULTS TO IMPROVE PROGRAM

1. Evidence must be presented in this section that assessment results have been analyzed and have been or will be used to improve candidate performance and strengthen the program. This description should not link improvements to individual assessments but, rather, it should summarize principal findings from the evidence, the faculty's interpretation of those findings, and changes made in (or planned for) the program as a result. Describe the steps program faculty has taken to use information from assessments for improvement of both candidate performance and the program. **This information should be organized around (1) science content knowledge, (2) professional and pedagogical knowledge, skill, and dispositions, and (3) student learning.**

(Response limited to 12,000 characters)

Candidates completing the Secondary General Science education program at Arkansas State University are well prepared and have a strong foundation in their content area. The University Supervisor and the Clinical Supervisors have consistently given high ratings to the teacher intern candidates.

All BSE General Science completers have passed all required Praxis II test for the past three years including required content and pedagogy exams. In Arkansas there are only two licensure areas for secondary science: Life/Earth Science and Physical/Earth Science. Candidates at Arkansas State enter one of three BSE General Science emphases areas: Biology, Chemistry, or Physics. The biology candidates work toward the Life/Earth Science license while both the chemistry and physics candidates work toward the Physical/Earth license. ASU does not have a specific Earth Science emphasis area therefore all candidates are required to take the same three earth/space course. Although all twelve candidates over the past three years have past the Earth Science: Content Knowledge Praxis II exam the science education faculty working with the chair of the Chemistry and Physics Department have designed a new course PHYS-3143 Atmospheric-Oceanic Dynamics which will be offered spring 2009 and will bring the number of required earth/space courses to four for all BSE General Science Candidates. Through collaboration with the College of Education the secondary education programs have access to the Praxis II scores and sub-scores. This is valuable data that will continually be analyzed by the science education committee and shared with the science content faculty in an ongoing curricula development process that will better prepare our candidates.

Beginning with the 2007-2008 school year it was decided by the science education committee to evaluate BSE General Science candidates each year checking GPA in all courses especially content courses. Up to this point the only check points were when the candidate was emitted into the teacher education program, pre-internship, and post-internship. The candidate must have a GPA of 2.5 in both their major courses and overall. However, by conducting an annual review faculty are more able to recognize potential problem areas candidates may be experiencing. Both the Department of Biological Sciences and Chemistry/Physics now actively assess all students in content courses including science education majors and the GPA in specific courses is a major component of this assessment. As reported in Section IV assessment 2 the GPA for all candidates (2005-2008) the mean overall GPA 3.53 and above while the mean GPA content courses was 3.22 and above. Even though these GPA's are considered high additional analysis of the GPA data revealed that the chemistry candidates were having some difficulty with two chemistry course (Quantitative Analysis and Survey of Physical Chemistry). This is currently being addressed by content faculty and the science education committee. One instrument created in and effort to improve all chemistry students' (not just science education candidates) performances in these two courses is a student survey/questionnaire. Special study sessions for these two courses are being considered as a direct result of the GPA assessment.

The unit of instruction assignment has been refined over the years to insure that candidates include the use of technology, varied instructional strategies, motivational activities, and can state clear and assessable performance objectives. Overall the candidates have done an outstanding job with this task and every effort will be made to continue to expect the candidates to meet the outstanding criteria. This instrument is seen as instrumental in assisting candidates prepare for the teacher intern semester. Candidates are required to create and develop an electronic online portfolio for the methods course which requires them to create the unit of instruction as the center piece of the method's portfolio.

The assessment of student teaching serves as an overview of candidates' ability perform models of instruction they have studied in conjunction with the content knowledge they have acquired. Assessment results provided from both the university supervisor and the clinical supervisors indicate that ASU secondary science candidates are well prepared when they enter the classroom as student teachers. At this time there are no plans to make any major changes in the teacher internship course.

The effect on student learning assessment is another of the fundamental assessments that assist in producing usable data as to whether the BSE-General Science programs educate candidates and prepares them for the secondary science classroom. Results reported by candidates indicate an increase in student

understandings of the science concepts being taught. The Science Education Committee set the standard for a candidate to achieve Acceptable on the Active Research Project (carried out in the Teacher Internship) at 25-50% improvement of science knowledge by the students. In particular, candidates considered Acceptable at improving student content knowledge if the students in the classroom have an improvement of 25% or larger with the candidate teaching the material as measured by a Pre/Post-Test design. Beginning fall 2008 Candidates will be required to run a t-test to determine if there is a difference in two and draw conclusions based on the results.

The science lab safety training module is possibly one of the single most important components of the secondary science education program. The candidates complete an intense six hour science lab safety program titled The Arkansas Edition–Total Science Safety System. The training includes pre and posttest and a structured survey activity. All candidates must complete the training with a score of 100% on the posttest and the structured survey training. If they do not score 100% they must repeat the training. The candidates are exposed to lab safety issues in their chemistry courses, methods course, teacher internship portfolio, and are required to address/demonstrate appropriate safety throughout the teacher intern experience.

Candidates are required to perform science research in several of their science content courses. The most organized research project and the one that has been a collaborative effort between the science faculty and the science education faculty is the Biology of Plants Research Project which is required of all biology majors. The rubric reported in assessment 7 is being used starting fall 2008. All BSE General Science candidates are required to complete a minimum of two of the four science courses identified as requiring a research project. For the future the Science Education Committee is working closely with the faculty that teach these courses to implement the scoring rubric in all of these classes at least for the science education candidates. Candidates are now encouraged to include this research in their portfolios as an artifact that will address both ASU Conceptual Frameworks and NSTA Standards.

The Teacher Internship Portfolio is recognized as the assignment that ties all of the candidate's science education experiences together. As reported in Section IV Assessment 8 a candidate that receives a score Target/Acceptable has addressed all of the ASU Conceptual Frameworks and most of the NSTA Standards. The candidate will be able to continue to build on this portfolio as a beginning science teacher. The Science Education Committee is continuing to work with science content faculty encouraging them to require science education candidates in their classes to report assignments in their portfolio.

Overall Arkansas State University is proud of its secondary science education program. Realizing that no program is perfect, efforts are made to continually monitor and improve the curriculum that is offered. One source of input into the need for improvements is made up of principals and secondary school teachers who have hosted our student teachers and hired and mentored our graduates. This group completes a yearly survey of teacher preparedness and does a good job of reminding us of the need to keep our candidates up to date on the use of technology and providing real world connections for the science that will be taught. In addition, teacher interns continually evaluate the program at the end of the teacher internship at 1-year after completion and again 2-years after completion. These assessments are used to continually adapt content and pedagogy to better serve candidates.

The main concern of the Biological Sciences and Chemistry/Physics Departments is the need for more candidates who will complete the program and take their place as the science educators of the future. Recruitment and retention are the two areas where the program needs to most improve. While the number of candidates enrolled in the program has remained relatively stable over the past several years, the number of candidates completing the program tends to go up and down in cycles. Candidates are encouraged to consult the program coordinator for early advising, to seek help if they are struggling in

any of their courses, and to network with one another to form study groups and help sessions.

All twelve secondary science completers over the past three years are now teaching science in Arkansas and Missouri. With the severe shortage of science teachers, especially in the Delta Region of Arkansas it is vital that we continue to recruit and attract candidates to the Arkansas State University Programs and continue improving our programs to insure that all candidates are ready for the classroom.

SECTION VI - FOR REVISED REPORTS OR RESPONSE TO CONDITIONS REPORTS ONLY

1. Describe what changes or additions have been made in response to issues cited in previous recognition report. List the sections of the report you are resubmitting and the changes that have been made. Specific instructions for preparing a revised report or a response to condition report are available on the NCATE web site at http://www.ncate.org/institutions/process.asp?ch=4 (Response limited to 24,000 characters.)

Please click "Next"

This is the end of the report. Please click "Next" to proceed.