

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

University of Louisiana at Monroe

2. State

Louisiana

3. Date submitted

MM DD YYYY

09 / 15 / 2008

4. Report Preparer's Information:

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6. Name of institution's program

BS Biology Education 6-12, BS Chemistry Education 6-12, BS Earth Science 6-12

7. NCATE Category

Science Education (multiple fields)

8. Grade levels⁽¹⁾ for which candidates are being prepared

6-12

(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

Louisiana Teaching Certificate

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.)

In 2004 the B.S. in Biology Education, B.S. in Earth Science Education, and B.S in Chemistry Education were redesigned to align with institutional, state and national standards

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.)

See attachment "Field and Clinical Experiences B.S. in Biology Education, Earth Science Education, and Chemistry Education".

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.)

B.S. in Biology Education, Earth Science Education, and Chemistry Education Programs
Candidates seeking a degree in a teacher education program must meet the admission requirements of the College. Tentative admission to Teacher Education will be granted to applicants who meet general University entrance requirements. Students with a felony conviction will not be admitted to Teacher Education. Application for admission to a teacher education program should be made during the first semester following the completion of 30 semester hours and before completing 90 hours. Transfer students from other Colleges of the University and other colleges and universities who have completed thirty or more applicable semester hours should make formal application during their second semester of enrollment. Conditional admission may be granted transfer students by the Dean of the College of Education and Human Development during the first semester if requirements are obviously met. Requirements for Admission and Retention to B.S. in Biology Education, Earth Science Education, and Chemistry Education Programs

1. Completion of not more than 90 semester hours, with a cumulative grade point average of 2.5 on a 4.0 scale, last grade counted.
2. Presentation of passing scores on Academic Skills tests in Reading, Writing, and Math (PRAXIS I). Information concerning registration for the exams can be obtained through the ULM Testing Services.
3. Completion of all developmental courses as required.
4. Successful completion of English 101 and 102 or their equivalents with minimum grades of "C".
5. Successful completion of required six hour Math sequence appropriate to degree program with grades of "C" or better.
6. Completion of 20 clock hours of preliminary laboratory experiences as directed in Educational Foundations 201.
7. Speech and Hearing Screening
8. Recommendation of advisor.

Applications for admission to a teacher education program are reviewed by the College's Admission Committee.

Requirements for Graduation from a Teacher Education Program

The candidate must meet all eligibility requirements for teacher certification in Louisiana, which include a 2.5 grade point average on all work toward the degree, grades of "C" or better in all courses counting toward the degree, and passing scores on all applicable portions of PRAXIS I and PRAXIS II. The candidate must also file an application for graduation with the Department Head at the beginning of the semester in which he/she plans to graduate.

Requirements for Louisiana Teaching Certification

The candidate must meet all eligibility requirements for Louisiana teacher certification before graduation. In order for a person to be granted a Louisiana Teaching Certificate upon graduation, there must be an overall grade point average of 2.5 on a 4.0 scale in all work to be credited toward a degree from an approved teacher education program. There must be no grade below C in any professional education course, psychology course, the teaching major or minor, or in specialized academic education, or general education courses. To be certified to teach in Louisiana, a person must present passing scores on all required parts of PRAXIS I and II as prescribed by the State Department of Education.

4. Description of the relationship of the program to the unit's conceptual framework². (Response limited to 4,000 characters.)

The ULM Interactive Learning Model: Learning Facilitators Making a Better World structures unit programs and provides focus and continuity between degree levels within individual programs and across various programs. Both initial and advanced programs within the unit subscribe to the conceptual framework, which is knowledge-based, articulated, shared, coherent, mission-congruent, and continuously evaluated. The central core of the graphic superimposes the letters of our name, ULM, and outlines the interactive process of the conceptual framework undergirding and defining the unit's professional education programs. The process, based upon standards, research findings, and sound professional practice, reflects the professional beliefs of unit members and addresses five program elements: 1) general studies; 2) content studies; 3) professional and pedagogical studies; 4) integrative studies; and 5) sequential, structured clinical and field experiences. Of the five elements, the clinical and field experiences provide the uniting link and offer the most authentic interaction, facilitate knowledge construction, provide a forum in which candidates apply that knowledge, and give concrete meaning to programs. At the graduate level, undergraduate programs serve as the General Studies element, and Content and Professional and Pedagogical Studies are Integrative.

(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 system³. (Response limited to 4,000 characters.)

The program consists of four portals, and candidates must satisfy the requirements of each portal before progressing to the next level. Within each portal are unique program assessments that are aligned to program standards. Program assessments are also aligned to institutional KSDs and so may be used for unit assessment as well as program assessment. For example, the Final Assessment of Student Teaching/Internship is a unit assessment. Specific program standards are attached to create unique program assessments. In this way the Final Assessment of Student Teaching/Internship informs both the unit and individual. Key assessments are stored in TaskStream, which is the information technology system utilized to collect, aggregate, and/or disaggregate data at the candidate, program, and unit levels. Candidates must score at least 2 on a scale of 1-3 on key assessments to pass through the portals.

(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.

Field and Clinical Experiences B.S. in Biology Education, Earth Science Education, and Chemistry Education
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See **Attachments** panel below.

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., undergraduate advising sheet and post degree or graduate advising sheet.) (Response limited to 6 pages)

BS Biology Education	BS Chemistry Education
BS Earth Science Education	

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: B.S. Biology Education		
Academic Year	# of Candidates Enrolled in the Program	# of Program Completers ⁴
2006-2007	17	1
2007-2008	16	2

Program: BS Chemistry Education		
Academic Year	# of Candidates Enrolled in the Program	# of Program Completers ⁴
2006-2007	4	0
2007-2008	2	0

Program: BS Earth Science Education		
Academic Year	# of Candidates Enrolled in the Program	# of Program Completers ⁴
2006-2007	1	0
2007-2008	1	1

(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	Flowers-Gibson, Beverly
Highest Degree, Field, & University ⁵	Ed.D. La Tech
Assignment: Indicate the role of the faculty member ⁶	Associate Dean for Undergraduate Programs & Certification
Faculty Rank ⁷	Associate Professor
Tenure Track	<input checked="" type="checkbox"/> YES
Scholarship ⁸ , Leadership in Professional Associations, and Service ⁹ : List up to 3 major contributions in the past 3 years ¹⁰	TEACH Delta Region grant Co-PI Phi Delta Kappa ULM Chapter President & Foundation Rep A+PEL ULM student chapter faculty advisor Educators Showcase Co-Director
Teaching or other professional experience in P-12 schools ¹¹	18 years teaching experience in P-12 schools

Faculty Member Name	Mann, Rhonda
Highest Degree, Field, & University ⁵	Masters Degree in Elementary Education 1-8, University of Louisiana at Monroe
Assignment: Indicate the role of the faculty member ⁶	Coordinator of Field Experiences and Teacher Candidacy
Faculty Rank ⁷	Instructor
Tenure Track	<input type="checkbox"/> YES
Scholarship ⁸ , Leadership in Professional Associations, and Service ⁹ : List up to 3 major contributions in the past 3 years ¹⁰	2009 A+PEL Advisor Member of ULM Alumni Hawaii International Conference for Education Presenter
Teaching or other	-Elementary Education Classroom teacher for grades 1, 5, and 6 for 18 years -

professional experience in P-12 schools ¹¹	Field Experience Coordinator Clinical Supervisor -Instructor for Classroom Management Techniques (Graduate Level) -Inservice Training LaTAAP - Professional Development Workshop Facilitator for Pre-Service Teachers
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Faculty Member Name	Ricks, Beth
Highest Degree, Field, & University ⁵	PhD in Curriculum and Instruction, Specialization in Reading and Children's /Young Adult Literature, Arizona State University
Assignment: Indicate the role of the faculty member ⁶	Faculty
Faculty Rank ⁷	Assistant professor
Tenure Track	<input checked="" type="checkbox"/> YES
Scholarship ⁸ , Leadership in Professional Associations, and Service ⁹ :List up to 3 major contributions in the past 3 years ¹⁰	1. Louisiana Senator ALAN (NCTE Affiliate) 2. Co-Chair (Elementary) and Chair (Secondary) Writing and submitting of Reading Competencies Alignment Report for BESE 3. Evaluator of Reading program for Madison Parish School District
Teaching or other professional experience in P-12 schools ¹¹	1. Coordinator for Elementary Professional Reading Block II (grades 3-6) and Secondary Professional Reading Block (grades 6-12) 2. Supervisor for student teachers and interns (grades 1-12)

Faculty Member Name	Schween, Dorothy C.
Highest Degree, Field, & University ⁵	Ed.D. Curriculum and Instruction Louisiana Education Consortium
Assignment: Indicate the role of the faculty member ⁶	PK-16+ Coordinator
Faculty Rank ⁷	Associate Professor
Tenure Track	<input checked="" type="checkbox"/> YES
Scholarship ⁸ , Leadership in Professional Associations, and Service ⁹ :List up to 3 major contributions in the past 3 years ¹⁰	1. Development of Assessment, a three-part online interactive training module posted on the TeachLouisiana website as an opportunity for Louisiana teachers to earn professional development credit. 2. Serving as ULM Faculty Senate President 2006-2007. 3. Three presentations accepted for AACTE 2007, one of which was: Schween, D., Sivakumaran, T., (2007): Digital Dilemma: Faculty Roles in Data Collection. Paper presented at the American Association for Colleges of Teacher Education (AACTE) New York, NY.
Teaching or other professional experience in P-12 schools ¹¹	18 Years in schools in Dallas, TX and Monroe, LA working with students with disabilities ages 3-16. One year as IEP Monitor for Monroe City Schools Office of Special Education Services

Faculty Member Name	Sivakumaran, Thillainatarajan
Highest Degree, Field, & University ⁵	Ph.D, Instructional Technology, University of Tennessee
Assignment: Indicate the role of the faculty member ⁶	Assistant Dean, NCTM Coordinator, Secondary Ed. Professor
Faculty Rank ⁷	Assistant Professor
Tenure Track	<input checked="" type="checkbox"/> YES
Scholarship ⁸ , Leadership in	Sivakumaran, T., Holland, G. (Awarded October 2006). E-Portfolios: Teaching with Emerging Technology (E-Portfolios: Teach Etech). (\$81,110.20) Wilhelm, L.,

Professional Associations, and Service ⁹ :List up to 3 major contributions in the past 3 years ¹⁰	Puckett, K., Beisser, S., Merideth, E., Sivakumaran, T., Wishart, W., Lessons Learned from the Implementation of Electronic Portfolios at Three Universities. TechTrends, July/August, 2006. Sivakumaran, T., Holland, G., Schween, D., Boyd, M., Miles, D., (2007): Pre-Service Teachers Understanding of Standards-Based Assessment. MAKING AN IMPACT: Best Practices to Enhance Achievement, Assessment, and Accountability for P-12 Learning, Atlanta, GA.
Teaching or other professional experience in P-12 schools ¹¹	2000-2001 Fulton High School Knoxville, TN, Taught chemistry and physical science grades 9-12

Faculty Member Name	Stringer, Gary L.
Highest Degree, Field, & University ⁵	Ph.D. University of Southern Mississippi
Assignment: Indicate the role of the faculty member ⁶	Professor and Head, Department of Curriculum and Instruction
Faculty Rank ⁷	Professor
Tenure Track	<input checked="" type="checkbox"/> YES
Scholarship ⁸ , Leadership in Professional Associations, and Service ⁹ :List up to 3 major contributions in the past 3 years ¹⁰	Scholarship-published in several major international and national science journals including the Journal of Vertebrate Paleontology and American Antiquity and have presented at 18 international and national meetings. Leadership-Executive Council for the Louisiana Academy of Sciences. Service-Served as a reviewer for ten different scientific journals in Europe.
Teaching or other professional experience in P-12 schools ¹¹	Have done over 40 presentations at elementary schools on science topics in last three years. Also worked with LA GEAR UP through ULM Museum of Natural History.

(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 exam)	State licensure test	Portal III (before student teaching)
Assessment #2:			

Content Knowledge – an assessment of general content knowledge in discipline to be taught (required)	Grades from Science Course and content alignment matrix	Course grades	At the end of Portal III
Assessment #3: Pedagogical and Professional Knowledge, Skills and Dispositions – Planning instruction and assessment (required)	Student Teaching Teacher Work Sample	Project	Portal IV
Assessment #4: Pedagogical and Professional Knowledge, Skills and Dispositions – Student Teaching Assessment (required)	Student Teaching Final Assessment	Project	Portal IV
Assessment #5: Effects on Student Learning (required)	Impact on Student Learning	Project	Portal III (CURR 304)
Assessment #6: [Pedagogical and Professional Knowledge, Skills and Dispositions – Legal/Safety/Ethical Issues (required)]	Classroom Management Portfolio (includes Lab Safety Video)	Portfolio	Portal III (CURR 375B)
Assessment #7: Content Knowledge – Research & Investigation (required)	Research Project	Project	Portal III (CURR 483B)
Assessment #8: Content Knowledge – Contextual Content (required)	Content Knowledge Portfolio	Portfolio	Portal III (CURR 303)

(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	b	b	b	b	b	e	e	e
(b) understand and can successfully convey to students the unifying concepts of science delineated by the National Science Education Standards;	e	e	b	b	b	e	e	b
(c) understand and can successfully convey to students important personal and technological applications of science in their fields of licensure;	e	e	b	b	b	e	e	b
(d) understand research and can successfully design, conduct, report evaluate investigations in science	e	b	e	b	e	e	b	e
(e) and understand and can successfully use mathematics to process and report data, and solve problems, in their field(s) of licensure.	e	b	e	b	e	e	b	e

(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;	e	e	b	e	b	e	e	b
(b) understand the philosophical tenets, assumptions, goals, and values that distinguish science from technology and from other ways of knowing the world;	e	e	b	e	b	e	e	b
(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	e	e	b	e	b	e	e	b

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	e	e	b	e	b	e	e	b

of inquiry leading to scientific knowledge;								
(b) engage students successfully in developmentally appropriate inquiries that require them to develop concepts and relationships from their observations, data, and inferences in a scientific manner.	e	e	b	e	b	e	e	b

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;	e	e	b	e	b	b	e	b
(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.	e	e	b	e	b	b	e	b

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;	e	e	e	b	e	e	e	e
(b) successfully promote the learning of science by students with different abilities, needs, interests, and backgrounds;	e	e	e	b	e	e	e	e
(c) successfully organize and engage students in collaborative learning using different student group learning strategies;	e	e	e	b	e	e	e	e
(d) successfully use technological tools, including but not limited to computer technology, to access resources, collect and process data, and facilitate the learning of science;	e	e	e	b	e	e	e	e
(e) understand and build effectively upon the prior beliefs, knowledge, experiences, and interests of students; and	e	e	e	b	e	e	e	e
(f) create and maintain a psychologically and socially safe and supportive learning environment.	e	e	e	b	e	e	e	e

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;	e	e	b	e	b	e	e	e

(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.	€	€	€	€	€	€	€	€
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7. Science in the Community. Teachers of science relate their discipline to their local and regional communities, involving stakeholders and using the individual, institutional, and natural resources of the community in their teaching. They actively engage students in science-related studies or activities related to locally important issues. To show that they are prepared to relate science to the community, teachers of science must demonstrate that they:

	#1	#2	#3	#4	#5	#6	#7	#8
(a) identify ways to relate science to the community, involve stakeholders, and use community resources to promote the learning of science;	€	€	€	€	€	€	€	€
(b) involve students successfully in activities that relate science to resources and stakeholders in the community or to the resolution of issues important to the community.	€	€	€	€	€	€	€	€

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

	#1	#2	#3	#4	#5	#6	#7	#8
(a) use multiple assessment tools and strategies to achieve important goals for instruction that are aligned with methods of instruction and the needs of students;	€	€	€	€	€	€	€	€
(b) use the results of multiple assessments to guide and modify instruction, the classroom environment, or the assessment process;	€	€	€	€	€	€	€	€
(c) use the results of assessments as vehicles for students to analyze their own learning, engaging students in reflective self-analysis of their own work.	€	€	€	€	€	€	€	€

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

	#1	#2	#3	#4	#5	#6	#7	#8
(a) understand the legal and ethical responsibilities of science teachers for the welfare of their students, the proper treatment of animals, and the maintenance and disposal of materials;	€	€	€	€	€	€	€	€
(b) know and practice safe and proper techniques for the preparation, storage, dispensing, supervision, and disposal of all materials used in science instruction;	€	€	€	€	€	€	€	€
(c) know and follow emergency procedures, maintain safety equipment, and ensure safety procedures appropriate for the activities and the abilities of students;	€	€	€	€	€	€	€	€
(d) treat all living organisms used in the classroom or found in the field in a safe, humane, and ethical manner and respect legal restrictions on their collection, keeping, and use.	€	€	€	€	€	€	€	€

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

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

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

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 completers²⁰ 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

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

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

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

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

Assessment 5

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

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Assessment 6

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

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

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)

Based on the analysis of Assessments 1-8, the following areas are being considered for future improvements to the program.

Content Knowledge

Preliminary analysis done after 2005-2006 academic year of data resulted in refinements in both the scoring rubrics and focus of several assessments and courses. A collaborative partnership was setup with Science faculty to further strengthen the program even though data shows that candidates are meeting the standards at either an acceptable or target level. This collaboration hopefully will yield higher PRAXIS content scores as well as higher scores on the research paper (key assessment 7) and the thematic teaching unit (key assessment 8). With key assessments 1, 2, 7 & 8 we do feel that our candidates are prepared thoroughly in knowing and demonstrating their content knowledge.

Professional and Pedagogical Knowledge, Skill, and Dispositions

Throughout the process of data collection and analysis, the Education faculty has been careful to note the interaction between professional and pedagogical knowledge, skill, and dispositions. In key assessment 3,4,5 & 6 we measure Professional and pedagogical knowledge, skills and disposition. The key assessments 5 & 6 are administered before student teaching, which allows education faculty to refine the candidates' pedagogical knowledge, skills and dispositions and prepare them for student teaching. In an effort to help our candidates with the safety and welfare standards in NSTA, we are collaborating with science faculty members to strengthen those components in their science lab courses. In student teaching, faculty help to build upon the experience of the candidates and continue to guide and refine their pedagogical knowledge, skills and dispositions. As the program progresses, care will be taken to periodically review placement of all assessments to ensure the best opportunity for candidates to demonstrate professional and pedagogical knowledge, as well as masterly level skill and positive dispositions.

Student Learning

An initial meeting with the Science faculty in the College of Arts and Sciences enabled Education faculty to clarify and leverage existing resources relating to the content area, while opening up several avenues for collaboration. These conversations resulted in more emphasis put on the research project as well as safety and welfare. While this is an ongoing process, future meetings could address concerns over content area literacy, impact on student learning, and field experience.

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.