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

NATIONAL COUNCIL FOR ACCREDITATION OF TEACHER EDUCATION

COVER SHEET

1. Institution Name
Bloomsburg University of Pennsylvania

2. State
Pennsylvania

3. Date submitted
09/15/2011

4. Report Preparer's Information:
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6. Name of institution's program
Secondary Science Education

7. NCATE Category
Science Education (multiple fields)

8. Grade levels\(^{(1)}\) for which candidates are being prepared
7-12

\(^{(1)}\) e.g. K-6, 7-9, 7-12, K-12

9. Program Type
10. Degree or award level
- Baccalaureate
- Post Baccalaureate
- Master's
- Post Master's
- Specialist or C.A.S.
- Doctorate
- Endorsement only

11. Is this program offered at more than one site?
- Yes
- No

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

13. Title of the state license for which candidates are prepared, including science areas licensed to teach (i.e., Biology, Chemistry, Physics, Broad Field, etc.)
- Biology, Chemistry, Earth & Space Science, or Physics

14. Program report status:
- Initial Review
- Response to One of the Following Decisions: Further Development Required or Recognition with Probation
- Response to National Recognition With Conditions

15. Is your unit seeking
- NCATE accreditation for the first time (initial accreditation)
- Continuing NCATE accreditation

16. State Licensure requirement for national recognition:
NCATE requires 80% of the program completers who have taken the test to pass the applicable state licensure test for the content field, if the state has a testing requirement. Test information and data must be reported in Section III. Does your state require such a test?
- Yes
- No

SECTION I - CONTEXT

1. Provide the following contextual information:

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

The Secondary Science Education licensure programs at Bloomsburg University prepare exceptional, caring science teachers to work with students in grades 7 -12. The Secondary Science Education undergraduate majors exist in the Department of Educational Studies and Secondary Education within the College of Education (ESSE). ESSE is dedicated to preparing future educators for the challenges of the twenty-first century, who value diversity in teaching methods and in preparing students of a diverse background to lifelong learning through an understanding of multicultural perspectives and content knowledge. The goals of the program and the teachers that are prepared within the program enhance the learning of students in secondary schools. Toward this end, teacher candidates that progress through the program are highly trained in content and pedagogy, preparing them to excel in teaching and helping their students to learn science as it relates to themselves and their place in the future of their communities.

All licensure programs in Secondary Science Education at Bloomsburg University fall under the guidelines of the NCATE accreditation in conjunction with the specialized professional association, the National Science Teachers Association (NSTA). There are no curricular constraints at the university level to prevent NSTA standards from being met. The undergraduate Secondary Science Education majors receive all of their ESSE education and methods courses from ESSE faculty, but their content courses are delivered via five departments housed in the College of Science and Technology (COST): Biological and Allied Health Sciences, Chemistry and Biochemistry, Geography and Geosciences, Mathematics, Computer Science and Statistics, and Physics and Engineering Technology. The Secondary Science
To obtain initial licensure as a 7th-12th Science teacher in Pennsylvania, teacher candidates must pass applicable portions of the PRAXIS II exams including at least one Content Knowledge test, which depend upon the licensure being pursued, complete a program of study in at least one area of science concentration and pedagogy courses, and be recommended by the Dean of the College of Education to the Office of Educator Licensure. This initial license, Level I, is a three-year temporary license. To transition from a temporary Level I license to a permanent Level II license, teachers must have three years of satisfactory service on the Level I certificate, completion of a Pennsylvania Department of Education-approved induction program, and satisfactory results on the Level II assessment.

2. Description of the field and clinical experiences required for the program, including the number of hours for early field experiences and the number of hours/weeks for student teaching or internships. Describe setting of student teaching (i.e., student teaching occurs in a science classroom). (Response limited to 8,000 characters.)

FIELD EXPERIENCES AND STUDENT TEACHING

All professional educator programs in Pennsylvania must include the components of field experiences and student teaching into the program design. As regulated by Chapter 354 of the Pennsylvania Code, the planned sequential field experiences may begin as early as the initial semester of college enrollment, prior to the required minimum 12 week full-time student teaching experience. Secondary Education students are to have participated in five full days of observation by the time they have taken 60 credits. These experiences provide opportunities to apply principles and theories from the program to actual practice in the classroom; provide practice with diverse populations, ages, and school settings.

The professional education program is required to provide evidence of the candidate’s participation in developmental field experiences and student teaching, under the supervision of college personnel and cooperating teachers who are well trained, highly qualified, and who demonstrate competence in teaching and mentoring in the specific content area. The program must also provide evidence that the criteria and competencies required for exit from the special education certification program are assessed through coursework, field experiences and student teaching.

For secondary education students, there are two stages of field experience and student teaching. In the first stage, teacher candidates spend five days (30 hours) observing a wide diversity of experiences covering many aspects of the school environment. These include the daily routines in the library, the guidance office, and in the main school office. Candidates are required to include specific science classroom observations. During this 30 hours of observation, they also are required to include experience with diverse populations prior to student teaching. This experience must involve documented experiences with public school students from diverse backgrounds, including ELL, race/ethnicity, gender, disability and low SES. Students may elect to participate in a range of practicum and professional development school projects during their pre-student teaching semester.

Candidates also complete a range of integrated field experiences embedded within required courses. This is a requirement in the course, Teaching Science in Secondary School.

The student teaching component of approved programs in the Commonwealth is expected to involve institution faculty with knowledge and expertise in the certification area being pursued by a teacher candidate. Cooperating teachers, under whose direct supervision the student teachers work, are expected to be trained by the institution and to have appropriate certification. Candidates must learn to identify and conduct themselves as members of the teaching profession. They need to know and use ethical guidelines and other professional standards related to special education practice. Candidates must also have opportunities to collaborate with other professionals and become informed advocates for sound educational practice and policies.

There is a minimum of 12 weeks full-time student teaching required. The student teacher must be supervised by faculty with knowledge and experience in the area of certification and a cooperating teacher with appropriate professional educator certification (3 years certified teaching experience) who is trained by the preparation program faculty.

3. A program of study that outlines the courses and experiences required for candidates to complete the program. The program of study must include course titles and numbers. (This information may be provided as an attachment from the college catalog or as a student advisement sheet.) Include forms showing requirements for science content courses for post degree or master’s programs. Syllabi and course descriptions are not generally necessary. Please include directions for each level of candidate (e.g., undergraduate advising sheet and post degree or graduate advising sheet.) A course of study for post baccalaureate or master's programs should include required science content.
4. This system will not permit you to include tables or graphics in text fields. Therefore any tables or charts must be attached as files here. The title of the file should clearly indicate the content of the file. Word documents, pdf files, and other commonly used file formats are acceptable. The system will not accept .docx files. Please include all information on an assessment (directions, scoring guide, data, and reflections on changes) in a single document. Note that if using MS Word, files must be in a version prior to MS Vista.

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

Program: Biology

<table>
<thead>
<tr>
<th>Academic Year</th>
<th># of Candidates Enrolled in the Program</th>
<th># of Program Completers</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008-09</td>
<td>0</td>
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<tr>
<td>2009-10</td>
<td>5</td>
<td>6</td>
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<tr>
<td>2010-11</td>
<td>2</td>
<td>13</td>
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Program: Chemistry

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<th># of Candidates Enrolled in the Program</th>
<th># of Program Completers</th>
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<td>2010-11</td>
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Program: Earth and Space Science

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<th># of Candidates Enrolled in the Program</th>
<th># of Program Completers</th>
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<td>2008-09</td>
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<td>2009-10</td>
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<td>2010-11</td>
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Program: Physics

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<td>2010-11</td>
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</table>

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

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

<table>
<thead>
<tr>
<th>Faculty Member Name</th>
<th>Highest Degree, Field, &amp; University</th>
<th>Assignment: I Indicate the role of the faculty member</th>
<th>Faculty Rank</th>
<th>Tenure Track</th>
<th>Scholarship, Leadership in Professional Associations, and Service: List up to 3</th>
</tr>
</thead>
<tbody>
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<td>YES</td>
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</table>
major contributions in the past 3 years\(^\text{8}\)
Teaching or other professional experience in P-12 schools\(^\text{9}\)

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

**SECTION II - LIST OF ASSESSMENTS**

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

<table>
<thead>
<tr>
<th>Type and Number of Assessment</th>
<th>Name of Assessment (^{10})</th>
<th>Type or Form of Assessment (^{11})</th>
<th>When the Assessment Is Administered (^{12})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment #1: Content Knowledge - Licensure Tests (required)</td>
<td>PRAXIS II</td>
<td>Licensure Exam</td>
<td>Recommended to be taken before student teaching; must be passed before licensure.</td>
</tr>
<tr>
<td>Assessment #2: Content Knowledge - an assessment of general content knowledge in discipline to be taught (required)</td>
<td>GPA in the major</td>
<td>GPA</td>
<td>Monitored throughout; computed before entry to the program; computed before student teaching.</td>
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<tr>
<td>Assessment #3: Pedagogical and Professional Knowledge, Skills and Dispositions - Planning instruction and assessment (required)</td>
<td>Lesson plan</td>
<td>Lesson plan rubric</td>
<td>During science methods class; Teaching Science in Secondary School (SECED 453).</td>
</tr>
<tr>
<td>Assessment #4: Pedagogical and Professional Knowledge, Skills and Dispositions - Student Teaching Assessment (required)</td>
<td>Appendix I: Formal Classroom Observation</td>
<td>Student Teaching Handbook</td>
<td>During student teaching by Cooperating Teacher and University Supervisor.</td>
</tr>
<tr>
<td>Assessment #5: Effects on Student Learning (required)</td>
<td>Unit plan written during student teaching</td>
<td>Unit plan rubric</td>
<td>During student teaching; evaluated by university supervisor.</td>
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<tr>
<td>Assessment #6: Pedagogical and Professional Knowledge, Skills and Dispositions - Legal/Safety/Ethical Issues (required)</td>
<td>Appendix K: Final Evaluation Form</td>
<td>Student Teaching Handbook</td>
<td>Filled out four times during and at the end of student teaching by Cooperating Teacher and University Supervisor.</td>
</tr>
<tr>
<td>Assessment #7: Content Knowledge - Research &amp; Investigation (required)</td>
<td>Performance in content knowledge courses in which students conduct or are involved with research and investigation studies</td>
<td>Grades in select science courses</td>
<td>Monitored during and computed at the completion of the courses.</td>
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<tr>
<td>Assessment #8: Content Knowledge - Contextual Content (required)</td>
<td>Grade in class</td>
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<td>Monitored during and computed at the completion of the course.</td>
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Performance in the Course 65.453 (SECED 453): Teaching Science in Secondary School

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

SECTION III - RELATIONSHIP OF ASSESSMENT TO STANDARDS

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

1. NSTA Standards

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

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

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Dimensions of standards are separated out from each other when it is highly likely they will be found in different assessment instruments. When the dimensions are likely to be apparent in the same assessment instrument, they have been left together.

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

- (a) understand the historical and cultural development of science and the evolution of knowledge in their discipline;
- (b) understand the philosophical tenets, assumptions, goals, and values that distinguish science from technology and from other ways of knowing the world;
- (c) engage students successfully in studies of the nature of science including, when possible, the critical analysis of false or doubtful assertions made in the name of science.

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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

- (a) understand the processes, tenets, and assumptions of multiple methods of inquiry leading to scientific knowledge;
- (b) engage students successfully in developmentally appropriate inquiries that require them to develop concepts and relationships from their observations, data, and inferences in a scientific manner.

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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:

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<td>(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;</td>
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<td>g</td>
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<td>(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.</td>
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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:

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<td>(a) vary their teaching actions, strategies, and methods to promote the development of multiple student skills and levels of understanding;</td>
<td>g</td>
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<td>(b) successfully promote the learning of science by students with different abilities, needs, interests, and backgrounds;</td>
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<td>(c) successfully organize and engage students in collaborative learning using different student group learning strategies;</td>
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<td>b</td>
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<td>(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;</td>
<td>e</td>
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<td>b</td>
<td>b</td>
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<td>(e) understand and build effectively upon the prior beliefs, knowledge, experiences, and interests of students; and</td>
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<td>(f) create and maintain a psychologically and socially safe and supportive learning environment.</td>
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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:

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<td>(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;</td>
<td>g</td>
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<td>b</td>
<td>g</td>
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<tr>
<td>(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.</td>
<td>e</td>
<td>e</td>
<td>b</td>
<td>b</td>
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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:

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<td>(a) identify ways to relate science to the community, involve stakeholders, and use community resources to promote the learning of science;</td>
<td>g</td>
<td>g</td>
<td>b</td>
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<tr>
<td>(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.</td>
<td>e</td>
<td>e</td>
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<td>b</td>
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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:

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<td>(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;</td>
<td>g</td>
<td>g</td>
<td>b</td>
<td>b</td>
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<td>(b) use the results of multiple assessments to guide and modify instruction, the classroom environment, or the assessment process;</td>
<td>e</td>
<td>e</td>
<td>b</td>
<td>b</td>
<td>b</td>
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<td>(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.</td>
<td>g</td>
<td>g</td>
<td>g</td>
<td>b</td>
<td>g</td>
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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:

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<td>(a) understand the legal and ethical responsibilities of science teachers for the welfare of their students, the</td>
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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:

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

SECTION IV - EVIDENCE FOR MEETING STANDARDS

DIRECTIONS: The 8 key assessments listed in Section II must be documented and discussed in Section IV. Taken as a whole, the assessments must demonstrate candidate mastery of the SPA standards. The key assessments should be required of all candidates. Assessments and scoring guides and data charts should be aligned with the SPA standards. This means that the concepts in the SPA standards should be apparent in the assessments and in the scoring guides to the same depth, breadth, and specificity as in the SPA standards. Data tables should also be aligned with the SPA standards. The data should be presented, in general, at the same level it is collected. For example, if a rubric collects data on 10 elements [each relating to specific SPA standard(s)], then the data chart should report the data on each of the elements rather than reporting a cumulative score.

In the description of each assessment below, the SPA has identified potential assessments that would be appropriate. Assessments have been organized into the following three areas to be aligned with the elements in NCATE’s unit Standard 1:

- Content knowledge (Assessments 1, 2, 7 and 8)
- Pedagogical and professional knowledge, skills and dispositions (Assessments 3, 4, and 6)
- Focus on student learning (Assessment 5)

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

For each assessment, the compiler should prepare one document that includes the following items:

1. A two-page narrative that includes the following:
   a. A brief description of the assessment and its use in the program (one sentence may be sufficient);
   b. A description of how this assessment specifically aligns with the standards it is cited for in Section III. Cite SPA standards by number, title, and/or standard wording.
   c. A brief analysis of the data findings;
   d. An interpretation of how that data provides evidence for meeting standards, indicating the specific SPA standards by number, title, and/or standard wording; and
   e. The assessment tool itself or a rich description of the assessment (often the directions given to candidates);
   f. The scoring guide for the assessment; and
   g. Charts that provide candidate data derived from the assessment.

The responses for e, f, and g (above) should be limited to the equivalent of five text pages each, however in some cases assessment instruments or scoring guides may go beyond five pages.

Note: As much as possible, combine all of the files for one assessment into a single file. That is, create one file for Assessment 4 that includes the two-page narrative (items a – d above), the assessment itself (item e above), the scoring guide (item f above), and
the data chart (item g above). Each attachment should be no larger than 2 mb. Do not include candidate work or syllabi. There is a limit of 20 attachments for the entire report so it is crucial that you combine files as much as possible.

Please name files as directed in the Guidelines for Preparing an NCATE Program Report found on the NCATE web site at the following URL: http://www.ncate.org/institutions/resourcesNewPgm.asp?ch=90

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

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

Provide assessment information as outlined in the directions for Section IV
1. The names of all licensure tests or professional examinations required by the state for content and pedagogical or professional knowledge. 15
2. Description of the alignment between licensure test data and applicable NSTA standards. However, if the test is a science content Praxis II test, the alignment is not required (e.g., Praxis II 20235: Biology Content).
3. Aggregated pass rates for each year over the past 3 years, including the most recent academic year. Data must be presented on all completers, even if there were fewer than 10 test takers during a single year. Eighty percent of program completers 16 who have taken the content test must pass the applicable state licensure test if the state has such a test.
4. The mean and range of sub-scores for the most recent academic year.
5. A single attachment of assessment documentation, including:
   (a) the assessment tool or description of the assignment;
   (b) the scoring guide for the assessment; and
   (c) candidate data derived from the assessment.
   Data should be in aggregate form (not scores for each candidate) and disaggregated by licensure area (biology, chemistry, middle school, etc) and by program (undergraduate, post degree, masters of teaching).
   (d) reflections on any rubric changes and why those changes occurred may be included here.
   The narrative section for each assessment (1-5 above) is limited to two text pages. If the attachment exceeds the 2mb file size limit by NCATE, break the attachment into logical parts.

See Attachments panel below.

Assessment 1 - Content Knowledge - Licensure Tests

NOTE: In addition to the above all programs must submit the appropriate NSTA Content Analysis Form. These are available at the following URL: http://www.ncate.org/public/programStandards.asp?ch=4#NSTA Download the appropriate form, fill it out, and attach it here.

Assessment 2: Grade Point Average

See Attachments panel below.

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

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

Provide assessment information as outlined in the directions for Section IV in a single attachment

NOTE: In addition to the above all programs must submit the appropriate NSTA Content Analysis Form. These are available at the following URL: http://www.ncate.org/public/programStandards.asp?ch=4#NSTA Download the appropriate form, fill it out, and attach it here.

See Attachments panel below.

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

Provide assessment information as outlined in the directions for Section IV in a single attachment

Assessment 3: Lesson 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.

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

Provide assessment information as outlined in the directions for Section IV in a single attachment

Assessment 4: Student Teaching Assessment
See Attachments panel below.

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

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

Provide assessment information as outlined in the directions for Section IV in a single attachment

Assessment V: Unit Plan
See Attachments panel below.

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

Assessments might include performance in a safety module with minimum levels of performance in each of the areas: 9a, 9b, 9c and 9d. This assessment must address safety knowledge and understanding that a science teacher needs to know and be able to do.

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

Provide assessment information as outlined in the directions for Section IV

Assessment 6: Student Teaching Observation Form
See Attachments panel below.

7. CONTENT KNOWLEDGE: An assessment that demonstrates knowledge of research and investigation in science. Candidates understand multiple forms of scientific inquiry; can design, conduct, and report research in their field; and can use mathematics and appropriate technology to collect, process, and explain data. NSTA standards that could be addressed by this assessment include, but are not limited to, standards 1d-e.
Assessments might include performance in or on a science content thesis, science research project, occupational experience in scientific research, or some similar confirmed experiences in the design of research in science, with criteria aligned with requirements of this assessment. This includes the candidate designing the experiment, collecting the data, analyzing the data and reporting on the data.

Provide assessment information as outlined in the directions for Section IV

![Assessment 7: Content Knowledge - Research & Investigation](Attachments)

See Attachments panel below.

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

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

Provide assessment information as outlined in the directions for Section IV.

![Assessment 8: Content Knowledge: Contextual Content](Attachments)

See Attachments panel below.

SECTION V - USE OF ASSESSMENT RESULTS TO IMPROVE PROGRAM

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

(Response limited to 12,000 characters)

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

1. For Revised Reports: Describe what changes or additions have been made to address the standards that were not met in the original submission. Provide new responses to questions and/or new documents to verify the changes described in this section. Specific instructions for preparing a Revised Report are available on the NCATE web site at http://www.ncate.org/Accreditation/ProgramReview/ProgramReportSubmission/RevisedProgramReports/tabid/453/Default.aspx

For Response to Conditions Reports: Describe what changes or additions have been made to address the conditions cited in the original recognition report. Provide new responses to questions and/or new documents to verify the changes described in this section. Specific instructions for preparing a Response to Conditions Report are available on the NCATE web site at http://www.ncate.org/Accreditation/ProgramReview/ProgramReportSubmission/ResponsetoConditionsReport/tabid/454/Default.aspx

(Response limited to 24,000 characters.)

Please click "Next"

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