



# Understanding Our Secondary Content in the Social Sciences Standard

The program ensures that teacher candidates have the content preparation necessary to successfully teach the social sciences to increasingly rigorous state standards for college and career readiness.

## WHY THIS STANDARD?

High school teacher candidates must develop a sophisticated level of knowledge in the social sciences they will be licensed to teach if they are to help their students succeed in increasingly rigorous classrooms and graduate from high school college and career ready.

## WHAT IS THE FOCUS OF THE STANDARD?

If a state does not have regulations that require that all high school social studies teacher candidates pass adequate subject-matter licensing tests, the program's subject preparation requirements are examined. At the undergraduate level, candidates should major in a teachable social science discipline if they are going to teach one subject; if they are going to teach under a composite certification (i.e., general social science), they should earn a minor in history and another core social science or complete at least 50 semester credit hours across the social sciences, including at least 15 semester credit hours in history. At the graduate level, the transcript review process is examined to check that programs are verifying that their incoming candidates have sufficient content knowledge in the area they are licensed to teach.

**Standard applies to: Secondary programs.**

## Standard and Indicators

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### Rationale

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The rationale summarizes research about this standard. The rationale also describes practices in the United States and other countries related to this standard, as well as support for this standard from school leaders, superintendents, and other education personnel.

### Methodology

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The methodology describes the process NCTQ uses to score institutions of higher education on this standard. It explains the data sources, analysis process, and how the standard and indicators are operationalized in scoring.

### Research Inventory

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The research inventory cites the relevant research studies on topics generally related to this standard. Not all studies in the inventory are directly relevant to the specific indicators of the standard, but rather they are related to the broader issues that the standard addresses. Each study is reviewed and categorized based on the strength of its methodology and whether it measures student outcomes. The strongest "green cell" studies are those that both have a strong design and measure student outcomes.

# Standard and Indicators

## Standard 8: Secondary Content in the Social Sciences

The program ensures that teacher candidates have the content preparation necessary to teach the social sciences to increasingly rigorous state standards for college and career readiness.

### **Standard applies to: Secondary programs.**

*Standard 8, previously High School Content, has been replaced by two new standards: Standard 7, Secondary Content in the Sciences and Standard 8: Secondary Content in the Social Sciences. Because the depth and breadth of content requirements for secondary candidates seeking certification in English and math are generally adequate, but adequacy varies in the sciences and social sciences, a standard dedicated to each of the latter two areas provides more nuanced and actionable information. For more information, see [here](#).*

### **Indicator relating to outcomes that the program meets the standard at the undergraduate or graduate level:**

Institutions of higher education have traditionally articulated their vision of teacher preparedness in a subject area by defining a prescribed course of study through a major or minor. For secondary teachers charged with teaching several different subjects subsumed under one social science certification, pursuing multiple majors is impractical. Because it is particularly challenging for a program to craft adequate coursework requirements for multiple-subject social science certification (especially for candidates entering graduate programs of study), states licensing tests should be sufficiently rigorous to ensure content mastery in every subject a candidate will be certified to teach.

- 8.1** Using an outcomes-based approach, secondary certification in the social sciences requires passing either:
- a rigorous standalone test in every subject a teacher will be certified to teach,
  - OR
  - all sections of a multiple-subject test offering section-specific cut-scores that pertain to the subjects a teacher will be certified to teach.

Absent such licensing tests used to verify competency, we look for programs to require or verify courses of study as follows:

### **Indicator relating to courses of study that the program meets the standard at the undergraduate level:**

- 8.2** A secondary teacher candidate seeking social science certification in a state that requires single-subject certification must have a major (consisting of 30 or more semester credit hours) in the single teachable social science discipline for which certification will be awarded. A secondary teacher candidate seeking social science certification in a state that offers general social science certification must have coursework preparation entailing either (1) a major in history, (2) a minor (15 or more semester credit hours) in history and a minor in at least one other teachable social science (government/political science, economics, geography or psychology), or (3) at least 50 semester credit hours across the social sciences.

### **Indicator relating to courses of study that the program meets the standard at the graduate level:**

- 8.3** The burden posed by a stringent credit count does not relieve the program of its responsibility to ensure that secondary teacher candidates in the social sciences meet requirements for content knowledge preparation. If candidates have significant weaknesses in content knowledge, the program works with the candidate to remedy those weaknesses. When the program's application forms, catalogs or other public documents do not describe such a process and its requirements, the presumption will be made that no content preparation requirements are imposed on graduate teacher candidates.

# Rationale

## Standard 8: Secondary Content in the Social Sciences

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**Standard applies to: Secondary programs.**

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### RATIONALE

#### Research base for this standard

"Strong research"<sup>1</sup> conducted in Taiwan confirms what most would expect: teachers possess greater content knowledge in the social science disciplines for which they have completed content coursework. A large-scale study of secondary history teachers found that those with a history background demonstrated greater content knowledge and pedagogical content knowledge in history, compared to history teachers who had primarily studied a related field (such as civics or geography).<sup>2</sup>

Additional research<sup>3</sup> conducted in California found that high school students demonstrated superior knowledge of economics on a multiple choice assessment when taught by teachers with undergraduate degrees in economics.<sup>4</sup>

- 1 NCTQ has created "research inventories" that describe research conducted within the last decade or so that has general relevance to aspects of teacher preparation also addressed by one or more of its standards (with the exceptions of the Outcomes, Evidence of Effectiveness, and Rigor standards). These inventories categorize research along two dimensions: design methodology and use of student performance data. Research that satisfies our standards on both is designated as "strong research" and will be identified as such. That research is cited here if it is directly relevant to the standard; strong research is distinguished from other research that is not included in the inventory or is not designated as "strong" in the inventory. Refer to the [introduction](#) to the research inventories for more discussion of our approach to categorizing research. If a research inventory has been developed to describe research that generally relates to the same aspect of teacher prep as addressed by a standard, the inventory can be found in the back of this standard book.
- 2 Sung, P., & Yang, M. (2013). Exploring disciplinary background effect on social studies teachers' knowledge and pedagogy. *Journal of Educational Research*, 106, 77-88.
- 3 "Additional research" is research that is not designated as "strong" because it is not as recent and/or does not meet the highest standards for design methodology and/or use of student performance data.
- 4 This study does not meet our guidelines for "strong research" primarily due to the small sample size of 24 teachers. In addition, an essay-based assessment administered as part of the study found that students taught by economics majors underperformed relative to the control group, albeit by a small margin. Valetta, R., Hoff, K.J., & Lopus, J.S. (2014). Lost in translation? Teacher training and outcomes in high schools economics classes. *Contemporary Economic Policy*, 32(4), 695-709.

Several studies have found that while teachers' pedagogical knowledge may play a larger role in students' success than content knowledge, content knowledge is still essential.<sup>5</sup> For example, Monk (1994) emphasizes the importance of both content and pedagogy, indicating that the former was necessary but not sufficient.<sup>6</sup>

## OTHER SUPPORT FOR THIS STANDARD

For decades, teacher preparation and higher education reformers attempted to improve the rigor of undergraduate teacher preparation programs by promoting the requirement of full academic majors for prospective teachers. For example, the Holmes Group of the mid-1980s, a group of education school deans, advocated for programs in which teachers complete a traditional bachelor's degree program with a content-area major and then devote an additional year to teacher preparation, such as through a postbaccalaureate program. While this type of program has not always been executed effectively, the concept shows the ongoing emphasis on teachers' content knowledge.

The structure of the standard acknowledges that most states offer certification in the social sciences such that teachers with specialization in any one subject area may also teach other subject areas. Based on their high school science licensure requirements, many states seem to presume that a teacher with a background in one social science area is equally capable of teaching the consumer price index, the Articles of Confederation, and classical conditioning. Most states allow teachers to obtain general social science or combination licenses across multiple social science disciplines, and, in most cases, these teachers need only pass a general knowledge exam that does not ensure subject-specific content knowledge.<sup>7</sup> This means that a teacher with a background in psychology could be fully certified to teach history or economics having passed only a general social science test — and perhaps answering most of the history or economics questions incorrectly.

Given the prevalence of these pathways into high school teaching, requiring a major (30 semester hours) in each of the subjects in which a teacher is certified (e.g., history and economics for a teacher with a general social science certification) would be unrealistic. On the other hand, requiring anything less than at least two minors (15 semester hours each) or 50 credit hours across the social sciences for general science certifications would clearly be inadequate. Given that history continues to dominate the secondary social studies curriculum, all teachers with a general social science certification should earn at least a minor in history.

This standard garners support from school district superintendents.

5 Baumert, J. (2010). Teachers' mathematical knowledge, cognitive activation in the classroom, and student progress. *American Educational Research Journal*, 47(1), 133-180.

6 Monk, D. (1994).

7 National Council on Teacher Quality. *Handy Dandy Guide to NCTQ's Secondary Content Analysis*. Retrieved from <http://www.nctq.org/dmsView/NCTQ - Standard 7,8 Groundwork - Infographic on Secondary Certification>

# Methodology

## How NCTQ scores the Secondary Content in the Social Sciences Standard

### Standards and Indicators

#### **DATA USED TO SCORE THIS STANDARD**

Evaluation of secondary teacher preparation programs under Standard 8: Secondary Content in the Social Sciences uses the following sources of data:

- State regulations that specify the available secondary teacher certifications
- State documents that outline possible teaching assignments and required licensing tests for each secondary certification
- Course requirements and descriptions found in institution of higher education (IHE) catalogs
- Degree plans provided by IHEs
- Relevant IHE web pages, including web pages for the college of education and the registrar, and those relevant to graduate school admission
- Admissions-related documents, including transcript review forms

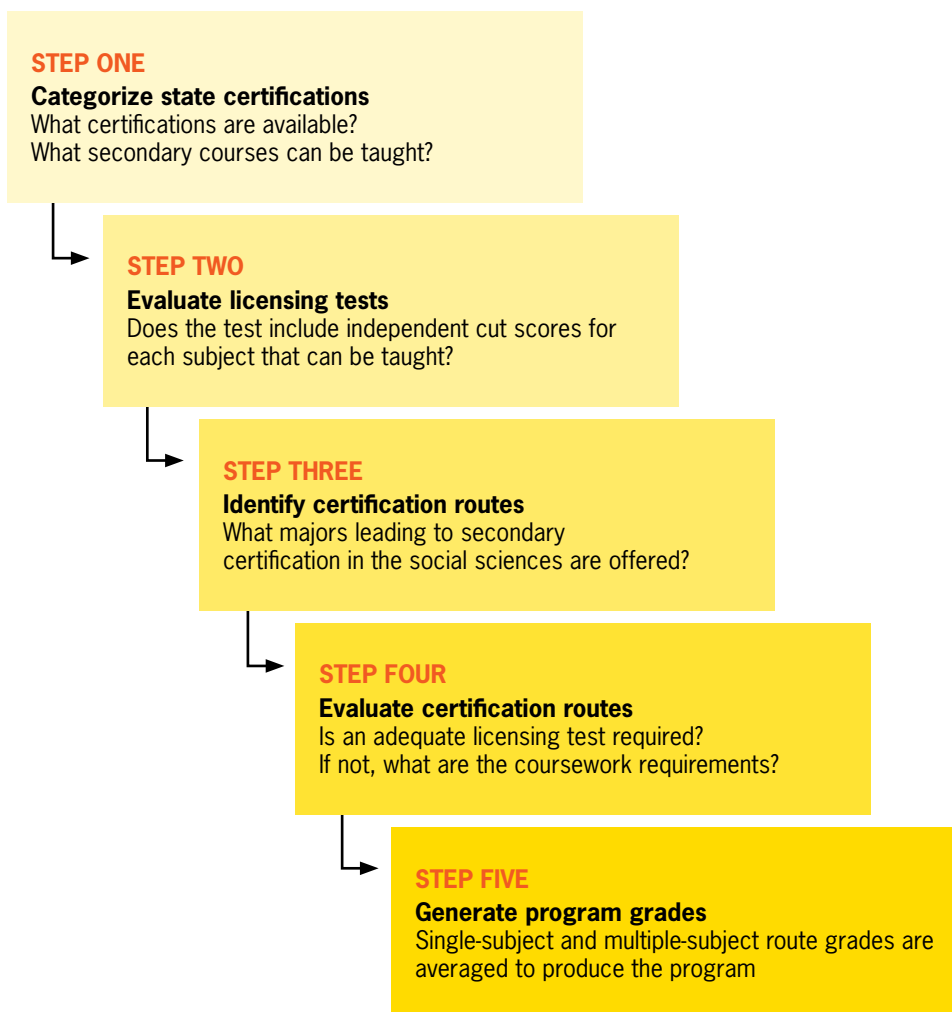
#### **WHO ANALYZES THE DATA**

A general analyst evaluates each program using a detailed scoring protocol from which this scoring methodology is abstracted. Twenty percent of programs are randomly selected for analysis by a second general analyst. For information on the process by which scoring discrepancies are resolved, see the “scoring processes” section of the [General Methodology](#).

#### **SCOPE OF ANALYSIS**

There are four major steps in analysis. First, analysts identify and categorize the social science certifications in each state as either single-subject or multiple-subject based on the possible teaching assignments. Next, the adequacy of the state’s licensing test requirements is determined based on whether the test provides an independent cut score for each subject that can be taught under the certification. Once the state context for each certification is established, analysts identify the majors leading to certification for each secondary program. Finally, if the licensing test is not adequate for a specific certification, analysts examine the prep program’s coursework requirements for the major(s) leading to that certification. Where adequate licensing tests are found, content preparation is deemed satisfactory without a review of coursework requirements.

## Steps of Secondary Content in the Social Sciences Analysis



More detail about each step in this process follows below, including an explanation of how program ratings are calculated under this standard. Information about coursework satisfying Indicators 8.2 and 8.3 can be found at the end of this document.

### STEP ONE: CATEGORIZE STATE CERTIFICATIONS

As illustrated in this [Handy Dandy Guide to NCTQ's Secondary Content Analysis](#), each state has its own organization for secondary certification, making it necessary to evaluate this standard within a state context. The evaluation process begins by using state regulations to identify all social science certifications that allow high school-level instruction.

Certifications within the social sciences are categorized as either single subject or multiple subject. Single-subject certifications allow an individual to teach only the subject specified on the certification, such as history certification that only allows teachers to teach high school history courses. Multiple-subject certification allows an individual to teach two or more subjects. General social science certification, which permits instruction in all high school social science courses is one example of a multiple-subject certification. In most instances, social science certifications are categorized as follows:

Single-Subject Certifications	Multiple-Subject Certifications
Economics Geography History Political Science Psychology Anthropology Sociology	General social science (all of the social sciences)

As part of categorizing the social science certifications in each state, analysts review information on which high school-level courses teachers can teach with each certification. Not all states follow typical designations. For example, Illinois and Massachusetts offer what appears to be single-subject certification in political science; however, under these certifications, both states permit instruction in the other social science subjects. Consequently, in those two states, the political science certification is categorized as multiple-subject.

## STEP TWO: EVALUATE LICENSING TESTS

With the certifications in each state categorized, analysis under this standard continues with a review of the licensing test(s) required for each certification. Individual states set licensing requirements as a condition of certification.<sup>8</sup> Most states require licensing tests for all certifications; however, there are instances where individual certifications are untested. Licensing tests for single-subject certifications are deemed adequate if the majority of the questions are focused on content relevant to the certification. In almost all cases where a licensing test is required for single-subject certification, the test is found to be adequate.<sup>9</sup>

### Missouri's approach to social science certification

Teacher candidates pursuing the “teach everything” social studies certification in Missouri must pass the *Social Science Multi-Content* licensing test that is unique among general social science tests. The test includes six sub-tests and Missouri requires teacher candidates to pass all six in order to earn certification. The sub-tests include:

- U.S. History (40 questions)
- World History (40 questions)
- Economics (40 questions)
- Geography (40 questions)
- Political Science (40 questions)
- Behavioral Sciences (40 questions)

This design helps to ensure teacher candidates possess content knowledge in each subject they will be certified to teach.

- 8 Some states do not require teachers to pass a licensing test until after their first year as the teacher of record. North Carolina, for example, allows teachers to fulfill the testing requirement in their second year of teaching, provided they attempt to pass the assessments during their first year.
- 9 Wisconsin provides one counterexample. The state's single-subject certification in biology, which limits instruction to biology courses, requires candidates to earn a passing score on a general science content knowledge licensing test. Only 20 percent of the questions on that test are focused on biology; the remaining 80 percent covers chemistry, earth science, physics, and general science concepts. The passing score reflects overall performance on the test, with no specific information provided about the candidate's performance on the biology questions. This same test is also used for Wisconsin's single-subject certifications in chemistry, earth and space science, life and environmental science, and physics. In each case, the use of this test for single-subject certification is deemed inadequate because of insufficient coverage of the subject for which certification is being sought.

For a multiple-subject test or series of tests to be deemed adequate, independent cut scores must be required for each subject covered under the certification. To provide an example, a licensing test for a “teach everything” social science certification would be deemed adequate only if it required candidates to independently pass sections for history, political science, and the other social sciences. Without separate cut scores for each subject, it is possible for a candidate to incorrectly answer almost all the questions focused on political science, for example, but score well enough on the remaining questions to pass the test.

There is considerable variety in the certifications and licensing test requirements of each state. In addition to listing the available certifications in each state, this [Handy Dandy Guide to NCTQ's Secondary Content Analysis](#) also catalogs the adequacy of licensing test(s) for every certification.

### STEP THREE: IDENTIFY CERTIFICATION ROUTES

Using course catalogs, analysts identify the certification routes – the majors, minors, and other defined sequences of courses that each IHE mandates to satisfy state requirements for a specific secondary teacher certification in the sciences. In many instances, more than one route at an IHE is found to lead to a given certification. Because this is the most complicated aspect of program analysis, two analysts independently complete this work to ensure the accuracy of certification route identification.

Analysts identify all certification routes offered at each IHE and evaluate up to three single-subject and three multiple-subject certification routes for each program.<sup>10</sup> In cases where there are more than three single-subject certification routes, those without adequate licensing tests are given priority over those with adequate licensing tests. Where all else is equal, the following order of preference is observed for single-subject certifications:

#### Single-Subject Certifications

1. History\*
2. Political Science/Government\*
3. Economics\*
4. Geography\*
5. Psychology\*
6. Sociology
7. Anthropology

\* Subject is categorized as one of the core social sciences (see step four)

Where there are more than three multiple-subject general social science certification routes, preference is given in the *inverse* order of single-subject certifications list above.<sup>11</sup> As an example, if teacher candidates may pursue social science certification by majoring in history, economics, geography, or sociology, analysis would be completed for the sociology, geography,

<sup>10</sup> This standard evaluates no more than three single-subject and multiple-subject routes in order to eliminate two sources of redundancy in the analysis. First, when reviewing routes leading to physics certification, there is typically just one path offered by the program. However, when the program allows candidates to select any history major, for example, and the institution offers five or more history degrees, analysis of all five options, especially in instances where an adequate licensing test is required by the state, provides little to no additional insight. The second level of redundancy exists due to the nature in which programs are graded. Because the lowest single-subject and/or multiple-subject certification route grade determines the program grade and because the certification routes that have the highest probability of not satisfying the standard are evaluated first, analysis of a fourth single-subject or multiple-subject route is unlikely to alter the program's grade. Previous editions of the *Teacher Prep Review* evaluated up to five certification routes without independent consideration of single-subject and multiple-subject routes. That analysis would conclude if any certification route failed to meet the standard. In this edition of the *Teacher Prep Review*, analysis continues for up to three routes regardless of the grade for each individual route.

<sup>11</sup> This list orders subjects from most to least likely to be taught at the high school level based on the high school graduation requirements of the 50 states and District of Columbia. Because general social science certification allows instruction in every subject, it is critical to examine the certification routes that are least likely to address history and political science/government.



and economics majors.

The end product of the first three steps is an extensive database identifying the available certifications in each state, the adequacy of licensing test requirements, the certification routes offered at each IHE, and the number of majors leading to each certification route. The table below provides a snapshot of this database for a hypothetical IHE in Nevada.

### Database snapshot for hypothetical institution

Certification	State Licensure		IHE Offerings		Analysis Priority
	Subject Coverage	Adequate Licensing Test	Offered by IHE	Majors Leading to Certification	
Social Studies	Multiple	No	Yes	2	Both multiple-subject routes analyzed
Political Science	Single	No	Yes	1	1st single-subject route analyzed
Anthropology	Single	No	No	0	—
History of the U.S. and World	Single	Yes	Yes	1	2nd single-subject route analyzed
Economics	Single	Yes	Yes	1	3rd single-subject route analyzed
Geography	Single	Yes	No	0	—
Psychology	Single	Yes	Yes	1	Not analyzed
Sociology	Single	Yes	No	0	—

In the case of this hypothetical IHE, the two majors leading to social studies certification would both be evaluated as multiple-subject certification routes *without* adequate licensing tests. The major leading to political science certification would be evaluated as a single-subject certification *without* an adequate licensing test. The history and economics majors would be evaluated as single-subject certification routes with adequate licensing tests, and the psychology major would be excluded because three other single-subject routes are already included in analysis.

### STEP FOUR: EVALUATE CERTIFICATION ROUTES

All certification routes administered in states with adequate testing requirements satisfy analysis under Indicator 8.1 without a review of coursework. Under Indicator 8.2, all other **undergraduate** single-subject and multiple-subject certifications are evaluated on the basis of coursework requirements found in course catalogs and degree plans.

Analysis under this standard does not consider all social science subjects equally when evaluating majors leading to general social science certification. Together, **economics, geography, history, political science, and psychology are considered the core social sciences** under this standard. Courses in these subject areas are included in general social studies course counts for programs in every state. History receives special consideration due to the ubiquity of high school teaching

assignments in the subject.<sup>12</sup> Anthropology and sociology fall outside of the core social sciences and are generally excluded from course counts under this standard. An exception is made in states that offer discrete certifications in anthropology and sociology (i.e., those states for which anthropology and sociology are part of the state-defined range of social sciences); in those states, the analysis includes coursework completed in those disciplines.

**Analysis under this standard considers only required content coursework. Recommended courses and those primarily focused on pedagogy are excluded from analysis.**

## Undergraduate Analysis under Indicator 8.2

Certification Type	Scoring Criteria
<b>Single-Subject</b> (Economics, Geography, History, Political Science, Psychology, Anthropology, Sociology)	<p>Programs satisfy Indicator 8.2 if they require either 30 semester credit hours (SCH) of certification-specific coursework<sup>13</sup> or at least 26 credits of certification-specific coursework and at least 12 credits of supporting coursework. Supporting coursework covers courses that benefit instruction, but fall outside of what is directly taught under a given single-subject certification.<sup>14</sup></p> <p>Programs partly satisfy the indicator with at least 26 SCH of certification-specific coursework and at least 8 SCH of supporting coursework.</p>
<b>Multiple-subject</b> (General social science certification)	<p>Programs satisfy Indicator 8.2 with 15 SCH of certification-specific coursework in history and one of the other core social sciences,<sup>15</sup> 30 SCH of certification-specific coursework in history, or 50 SCH across the social sciences including at least 15 SCH in history.</p> <p>Programs nearly satisfy the indicator with at least 42 SCH across the social sciences including at least 15 SCH in history.</p> <p>Programs partly satisfy the indicator with at least 50 SCH across the social sciences, but where fewer than 15 SCH of history is found.</p> <p>Programs satisfy a small part of the indicator with either a minimum of 30 SCH across the social sciences, including at least 15 SCH in history or at least 42 SCH across the social sciences, where fewer than 15 SCH of history is found.</p>

**Graduate** programs without adequate licensing tests are evaluated under Indicator 8.3. Graduate programs must demonstrate a clear commitment to ensuring secondary teacher candidates complete the same requirements as outlined for undergraduates. Graduate programs may also meet this indicator by requiring candidates to complete 15 SCHs (the equivalent of a minor) of graduate-level content coursework, which ensures candidates have an understanding of higher-level concepts relevant to the area of certification.<sup>16</sup> This provision relies on the assumption that a graduate-level political science course, for example, requires the requisite knowledge that can only be acquired from undergraduate political science coursework. In addition to using course catalogs and degree plans, analysis also relies on admissions documents (such as applications and transcript review forms) and other publicly available material which outline the course expectations for candidates entering into the program.

12 Analysis of high school graduation requirements finds states to require an average of three years in the social science, of which two years focus on U.S. history and world history.

13 Coursework on content that directly relates to and can be taught with the certification. For example, when evaluating a major leading to certification in economics, the certification-specific coursework count includes only economics courses.

14 As an example, anthropology courses are counted as supporting coursework when reviewing sociology certification routes.

15 Economics, geography, political science, and psychology.

16 This provision does not consider undergraduate coursework, even if it is completed during the graduate program. The content courses must be intended for graduate students, which are typically at the 500-level or higher for programs using a traditional course number system.



### Graduate Analysis under Indicator 8.3

Certification Type	Scoring Criteria
<b>Single-Subject</b> (Economics, Geography, History, Political Science, Psychology, Anthropology, Sociology)	<p>Program/certification route satisfies Indicator 8.3 if it requires an undergraduate major in the subject area, 30 SCH of certification-specific coursework at the undergraduate level, or 15 SCH of certification-specific coursework at the graduate level.</p> <p>Programs partly satisfy the indicator with at least 26 SCH of certification-specific coursework at the undergraduate level or 9 SCH of certification-specific coursework at the graduate level.</p>
<b>Multiple-subject</b> (General social science certification)	<p>Programs satisfy Indicator 8.3 with undergraduate minors in history and one of the other core social sciences, 15 SCH of certification-specific coursework at the undergraduate level in history and one of the other core social sciences, an undergraduate major in history, 30 SCH of certification-specific coursework at the undergraduate level in history, 50 SCH of certification-specific coursework in the social sciences, or 15 SCH of certification-specific coursework at the graduate level.<sup>17</sup></p> <p>Programs partly satisfy the indicator with either 42 SCH of certification-specific coursework in the social sciences at the undergraduate level or 15 SCH of certification-specific coursework at the graduate level.<sup>18</sup></p>

### Coursework included in analysis

Not all social science courses are included in the credit count. The following table provides examples of coursework that counts toward this standard and the subjects for which they would apply; the table also provides examples of courses that do not count and the reasons for their exclusion.

### Examples of courses that count toward Indicators 8.2 and 8.3

 Included in coursework count	 Excluded from coursework count
<p><b>PS 441 – The Legislative Process</b> A study of Congress and the state legislatures, covering the legislative power structure, legislative committees, the selection of legislators and the roles they play, decision making, and the relationship between the legislative and executive branches. (Counted for Political Science)</p> <p><b>AAS 587 – U.S. Civil Rights Movement since 1930</b> This course will focus on the struggle for African-American equality in the United States during the mid-20th century. It will examine key civil rights issues, events, leaders and organizations on both the local and national levels. Using historical documents and documentary film presentations, this course will discuss the status of race relations in America over the past 50 years. (Counted for History)</p> <p><b>PSYC 411 – Cognitive Psychology</b> Research and theories on sensory memory, attention, short-term and working memory, human learning and forgetting, imagery, long-term memory, speech perception, reading, language, thinking and problem solving, and decision making. (Counted for Psychology)</p>	<p><b>EDU 391 - Clinical Experience in Social Studies</b> This clinical experience is designed to provide school-based classroom experiences that prepare undergraduates to effectively student teach at the secondary school level. Students are placed in a secondary school setting under the guidance of a school-based teacher and a college-based supervisor. (Excluded due to focus on pedagogy and not content)</p> <p><b>PSY 336 – Education Psychology</b> This course is designed for teachers and individuals who are concerned with directing and influencing personality development and learning in human beings. It is hoped that they will be able to apply the principles of psychology to education and the teaching-learning process. (Excluded due to focus on professional preparation and not content)</p> <p><b>HIS 473 – Principles of Teaching History</b> History. Development of a philosophy for teaching history in the secondary schools. Current trends and issues, curriculum programs, teaching strategies, classroom procedures, and materials will be examined and developed. Field experience is required. (Excluded due to focus on pedagogy and not content)</p>

<sup>17</sup> Program must require at least one course in history.

<sup>18</sup> Program does not require at least one course in history.

## STEP 5: GENERATE PROGRAM GRADES

After completing analysis of up to three single-subject and three multiple-subject certification routes under Indicators 8.1 and 8.2 for undergraduate programs or Indicators 8.1 and 8.3 for graduate programs, the program rating is produced in the following manner:

### Program grade calculation

<b>Programs with only single-subject certification routes</b> Program rating reflects the lowest-rated single-subject certification route	
<b>Example #1</b> <ul style="list-style-type: none"> <li>■ Certification route in history earns an A</li> <li>■ Certification route in economics earns an A</li> <li>■ Certification route in geography earns an A</li> </ul> <b>Program receives a grade of A</b>	<b>Example #2</b> <ul style="list-style-type: none"> <li>■ Certification route in history earns an A</li> <li>■ Certification route in economics earns a C</li> <li>■ Certification route in geography earns an A</li> </ul> <b>Program receives a grade of C</b>
<b>Programs with only multiple-subject certification routes</b> Program rating reflects the lowest-rated multiple-subject certification route	
<b>Example #1</b> <ul style="list-style-type: none"> <li>■ First certification route in general social science earns a B</li> <li>■ Second certification route in general social science earns a C</li> <li>■ Third certification route in general social science earns an A</li> </ul> <b>Program receives a grade of C</b>	<b>Example #2</b> <ul style="list-style-type: none"> <li>■ First certification route in general social science earns an F</li> <li>■ Second certification route in general social science earns an A</li> </ul> <b>Program receives a grade of F</b>
<b>Programs with both single-subject and multiple-subject certification routes</b> Program rating reflects the average of the lowest-rated single-subject certification route and the lowest rated multiple-subject certification route	
Example	
<b>Single-subject certifications</b> <ul style="list-style-type: none"> <li>■ Certification route in history earns an A</li> <li>■ Certification route in economics earns an A</li> <li>■ Certification route in geography earns an A</li> </ul> <i>Single-subject routes earn an A</i>	<b>Multiple-subject certifications</b> <ul style="list-style-type: none"> <li>■ First certification route in general social science earns a B</li> <li>■ Second certification route in general social science earns a C</li> </ul> <i>Multiple-subject routes earn a C</i>
<b>Program receives a grade of B</b>	

# Research Inventory

## Researching Teacher Preparation: Studies investigating the preparation of secondary teacher candidates in the sciences and social sciences

These studies address issues most relevant to Standards 7-8: Secondary Content in the Sciences and Secondary Content in the Social Sciences

Area of research	Total number of studies	Studies with stronger design		Studies with weaker design	
		Measures student outcomes	Does not measure student outcomes	Measures student outcomes	Does not measure student outcomes
Std. 7	8	3	2	0	3
		Citations: 2, 3, 4	Citations: 5, 9		Citations: 1, 6, 7
Std. 8	4	2	1	1	0
		Citations: 2, 3	Citations: 8	Citations: 10	

Citations for articles categorized in the table are listed below.

**Databases:** Education Research Complete and Education Resource Information Center (peer-reviewed listings of reports on research including United States populations).

**Publication dates:** Jan 2000 – March 2017

See [Research Inventories: Rationale and Methods](#) for more information on the development of this inventory of research.

1. Backhus, D. A., & Thompson, K. (2006). Addressing the nature of science in preservice science teacher preparation programs: Science educator perceptions. *Journal of Science Teacher Education*, 17(1), 65–81.
2. Clotfelter, C. T., Ladd, H. F., & Vigdor, J. L. (2010). Teacher credentials and student achievement in high school. *Journal of Human Resources*, 45(3), 655–681.
3. Dee, T. S., & Cohodes, S. R. (2008). Out-of-field teachers and student achievement: Evidence from matched-pairs comparisons. *Public Finance Review*, 36(1), 7–32.
4. Goldhaber, D. D., & Brewer, D. J. (2000). Does teacher certification matter? High school teacher certification status and student achievement. *Educational Evaluation and Policy Analysis*, 22(2), 129–145.
5. Kind, V. (2014). A degree is not enough: A quantitative study of aspects of pre-service science teachers' chemistry content knowledge. *International Journal of Science Education*, 36(8), 1313–1345.
6. Nathan, M. J., & Petrosino, A. (2003). Expert blind spot among preservice teachers. *American Educational Research Journal*, 40(4), 905–928.

7. Saderholm, J. C., & Tretter, T. R. (2008). Identification of the most critical content knowledge base for middle school science teachers. *Journal of Science Teacher Education*, 19(3), 269–283.
8. Sung, P., & Yang, M. (2013). Exploring disciplinary background effect on social studies teachers' knowledge and pedagogy. *Journal of Educational Research*, 106, 77-88.
9. Swackhamer, L., Koellner, K., Basile, C., & Kimbrough, D. (2009). Increasing the self-efficacy of inservice teachers through content knowledge. *Teacher Education Quarterly*, 36(2), 63–78.
10. Valetta, R., Hoff, K.J., and Lopus, J.S. (2014). Lost in translation? Teacher training and outcomes in high schools economics classes. *Contemporary Economic Policy*, 32(4), 695-709.



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