

Standards of Program Quality and Effectiveness for the Subject Matter Requirement for the Multiple Subject Teaching Credential



State of California

California Commission on Teacher Credentialing

Updated July 2016

California Commission on Teacher Credentialing

State of California

2016

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Category I

Substance of the Subject Matter Program Curriculum

Standard 1: Program Philosophy and Purpose

The program of subject matter preparation for prospective multiple subject teachers is academically rigorous and intellectually stimulating. Program design follows from an explicit statement of program philosophy and purpose. The institution assigns high priority to and appropriately supports the program as an essential part of its mission.

Elements for Standard 1: Program Philosophy and Purpose

Guidance to Prospective Programs

- 1.1 The program is designed to establish strong foundational understanding of subject matter so that extended subject matter learning can continue during the teachers' professional preparation, induction and development.
- 1.2 The program prepares well-educated beginning teachers who understand significant ideas, structures and values in the disciplines that underlie the K-8 curriculum.
- 1.3 The program is designed to prepare prospective multiple subject teachers to analyze situations; synthesize information from multiple sources; make decisions on rational bases; communicate skillfully; and appreciate diverse perspectives.
- 1.4 Pertaining to the program philosophy and purpose statement, the institution provides evidence of collaboration and consultation in its development, and of dissemination of it to prospective and enrolled students and to local schools, among others.

Standard 2: Required Subjects of Study

In the program, each prospective multiple subject teacher studies and learns subjects that are required by Education Code Section 51210¹ and incorporated in *California Student Academic Content Standards*² and *State Curriculum Frameworks*, focusing on grades K through 8, including the following major subject areas of study: reading, language and literature; history and social science; mathematics; science; visual and performing arts; physical education; health; and human development. The curriculum of the program addresses the *Content Specifications for the Multiple Subject Teaching Credential* as set forth in Appendix A beginning on page 17 of this handbook.

Elements for Standard 2: Required Subjects of Study

Guidance to Prospective Programs

- 2.1 Required coursework in the program includes appropriate study in each major subject area.
- 2.2 In each major subject area, the program's coursework fulfills the provisions and elements of Standard 1.
- 2.3 In the program, remedial classes and other studies normally completed in K-12 schools are not counted in satisfaction of the required subjects of study.
- 2.4 The institution that sponsors the program determines, establishes and implements a standard of minimum scholarship (such as overall GPA, minimum course grade or other assessments) of program completion for prospective multiple subject teachers.

¹ See Appendix A, page 2 (A-2) for the verbatim text of Section 51210.

² In those areas where Academic Content Standards have not been adopted, programs should refer to other California Department of Education Standards such as the Challenge Standards.

Standard 3: Depth of Study

The program offers a set of concentrations and/or majors, each of which relates directly to one or more of the major subject areas of study. In the program, each prospective multiple subject teacher selects and completes a concentration or major consisting of twelve or more semester units (or the equivalent) of courses that are coherently related to each other. In each concentration and major, prospective teachers develop a strong understanding of the conceptual foundations of the subject as well as an understanding of how knowledge is created and organized in the subject. A concentration may include no more than three semester units (or the equivalent) of coursework that is required of all prospective teachers in the program.

Elements for Standard 3: Depth of Study

Guidance to Prospective Programs

- 3.1 Each concentration and major examines the principal topics and most fundamental ideas in the subject area. The sponsor(s) of each concentration and major describes how it represents a coherent course of study that extends or builds on core studies that all prospective teachers complete in the program.
- 3.2 In each concentration, at least twelve semester units (or the equivalent) examine the content of the subject; if pre-professional studies are part of a concentration, they are in addition to 12 semester units of content studies in the concentration.

Note: The subject matter program may fulfill Standard 3 (Depth of Study) in conjunction with Standard 4 (Integrative Study) by offering one or more integrative concentrations and/or by recognizing one or more cross-disciplinary majors.

Standard 4: Integrative Study

In one or more planned components of the program, each prospective multiple subject teacher systematically examines content-specific connections among two or more of the major subject areas that are commonly taught in grades K-8 by investigating their common or inter-related concepts, areas of concern, and methods of inquiry. In the integrative study component(s), the program highlights the underlying values and the higher-order research and thinking skills of the connected disciplines.

Elements for Standard 4: Integrative Study

Guidance to Prospective Programs

- 4.1 In the integrative study component(s) of the program, prospective teachers investigate key ideas that are closely related to the *California Student Academic Content Standards* and *State Curriculum Frameworks* for Grades K-8.
- 4.2 Each integrative study component addresses the *Content Specifications for the Multiple Subject Teaching Credential* as set forth in Appendix A beginning on page 17 of this handbook.
- 4.3 Each integrative study component develops the prospective teacher's understanding of how the conceptual foundations of the subjects are related to each other, how their concerns overlap, and how their practitioners produce new ideas and confirm new knowledge.
- 4.4 Each integrative study component develops the prospective teacher's awareness of fundamental values inherent in the connected disciplines, and includes study and application of their basic concepts, principles and nomenclatures.
- 4.5 In the integrative study component(s) of the program, each prospective teacher examines and uses higher-level skills of thinking and research practice as they occur in each discipline (including, but not limited to, the higher-order skills in Appendix A).

Note: The subject matter program may fulfill Standard 3 (Depth of Study) in conjunction with Standard 4 (Integrative Study) by offering one or more integrative concentrations and/or by recognizing one or more cross-disciplinary majors.

Standard 5: Effective Curriculum, Teaching and Assessment Practices

In the program, prospective multiple subject teachers participate in a variety of learning experiences that model effective curriculum practices, instructional strategies and assessment techniques, including those described in the *California State Curriculum Frameworks and Standards*. Prospective teachers learn to apply academic concepts and principles to specific situations, common problems, and current issues.

Elements for Standard 5: Effective Curriculum, Teaching and Assessment Practices

Guidance to Prospective Programs

- 5.1 Required coursework in the program includes: a) exemplary teaching practices such as interactive direct instruction, collaborative learning activities, active simulations, and media-enhanced instruction; b) innovative out-of-class projects and assignments such as oral histories, active data collection, collaborative fieldwork, and original research studies; and c) various models of assessment of students' own learning such as performance experiences, journals, self-assessments and other oral or written projects and examinations.
- 5.2 In some required courses in the program, prospective teachers extend their understanding of abstract ideas by learning and articulating applications of the ideas to specific situations, common problems, and current issues.
- 5.3 Faculty development programs enable college and university subject matter faculty members (including those who teach in the subject matter program) to explore and use exemplary, innovative practices related to curriculum, instruction and assessment.

Note: The remaining elements of this standard address the curriculum, instruction and assessment practices of the California State Curriculum Frameworks and Standards within each subject area for which these documents have been adopted.

- 5.4 Coursework in reading, language and literature addresses principles of language structure, language development and acquisition and language use in a variety of ways and includes hands-on experiences with a range of relevant language data. Core coursework provides for learning experiences that include composing, reading and analyzing texts from multiple genres.

- 5.5 Coursework in history and social science draws systematically on physical geography and social science concepts in the analysis and interpretation of history; includes active inquiries into important issues; and requires each prospective multiple subject teacher to complete at least one in-depth inquiry such as a research paper.
- 5.6 Coursework in mathematics enables and encourages each prospective multiple subject teacher to engage mathematical problems in a variety of ways; to explore and question mathematical problems and their characteristics; to develop conjectures related to solving mathematical problems; and to demonstrate why particular answers are correct. In the program, prospective teachers develop a deep understanding of mathematics that enables them to explain mathematical ideas and the reasons why algorithms yield correct results. Program coursework and advising encourage each prospective multiple subject teacher to examine and address the apprehensions and fears of many people toward mathematics.
- 5.7 Distinct or integrated coursework in earth science, life science and physical science includes tactile (hands-on) learning experiences that engage each prospective teacher in observing, recording, analyzing and interpreting scientific phenomena. At least one science course includes a laboratory.
- 5.8 Coursework in visual and performing arts enables prospective multiple subject teachers to understand the basic skills, techniques and conceptual foundations unique to each selected art form. The program offers distinct coursework in at least two art forms: visual art, dance, music and theater. Each course addresses the components and strands described in California curriculum policy documents. Coursework engages prospective teachers in (a) composing, designing, developing, creating, reflecting on and revising their original works, and (b) observing, analyzing and interpreting past and present works in the visual and performing arts. Coursework investigates the connections and commonalities of the arts disciplines, and examines means for their substantive integration with other subject areas.
- 5.9 Coursework in physical education addresses basic components of movement and physical activity, including principles of locomotion, non-locomotion, object manipulation, and the development of physical and motor fitness. This coursework addresses the disciplines of physical education including motor learning, biomechanics, exercise physiology, human growth and development, psychology, aesthetics, sociology and history. Coursework also addresses relationships between physical education and other subject areas, including connections with health and wellness concepts.

- 5.10 Coursework in health addresses the common causes of and interrelations between morbidity and mortality among children, youth and adults; connections between health and learning; and scientifically-based principles of health promotion and disease prevention.
- 5.11 Coursework in human development addresses the lifespan from conception through adolescence and engages prospective multiple subject teachers in observing, recording, analyzing and interpreting behavior.

Standard 6: Assessment of Subject Matter Competence

The subject matter program includes a summative assessment of the subject matter competence of each prospective multiple subject teacher during one or more program capstone experiences. The assessment is consistent with the provisions of Program Standard 1 and its scope incorporates the content of Program Standards 2 and 3, the *Content Specifications* in Appendix A, and courses completed in the program and previously at other institutions.

Elements for Standard 6: Assessment of Subject Matter Competence

Guidance to Prospective Programs

- 6.1 In fairness to each prospective teacher in the program, the summative assessment is congruent in scope and content with her or his specific studies in the program and at previously-attended institutions.
- 6.2 The assessment includes two or more assessment methods such as performance, portfolio, presentation, research project, field-experience journal, work sample, interview, oral examination, and written examination.
- 6.3 The systematic procedures that govern the summative assessment include a defensible process for evaluating performance, an appeal process, and a procedure for prospective teachers to repeat portions of the assessment as needed.
- 6.4 The sponsoring institution ensures that thorough records are maintained of each prospective teacher's performance in the summative assessment.
- 6.5 A program may choose to provide a formal assessment of subject matter competence for prospective multiple subject teachers who hold a baccalaureate degree but have not completed a California-approved program of subject matter preparation. In such cases the evaluation of coursework will be completed by qualified faculty.

- 6.6 The program staff periodically evaluates the quality, fairness and effectiveness of the assessment, including its consistency with the requirements and elements of Program Standard 1.

Category II

Qualities of the Subject Matter Program Curriculum

Standard 7: Introductory Classroom Experiences (K-8)

The program provides each prospective multiple subject teacher with planned, structured observations and experiences in K-8 classrooms beginning as early as possible in the subject matter program. Each prospective teacher's introductory classroom experiences are linked to subject matter coursework, and are characterized by diversity and dialogue. The sponsoring institution seeks to collaborate with school districts in selecting schools and classrooms that demonstrate exemplary practice as described in the California Standards for the Teaching Profession. The sponsoring institution also communicates with school districts in making logistical arrangements and in planning teachers' observations and experiences.

Elements for Standard 7: Introductory Classroom Experiences (K-8)

Guidance to Prospective Programs

- 7.1 In selected K-8 classrooms, introductory experiences include one or more of the following activities: structured observations, supervised instruction or tutoring of students, and other school-based observations and activities that are appropriate for undergraduate students in a subject matter preparation program.
- 7.2 Each prospective teacher's field observations and experiences are linked to the content of college or university coursework in the program. In one or more subject matter courses, prospective teachers reflect on, analyze and discuss their K-8 observations and experiences in relation to course content.
- 7.3 Each prospective teacher's K-8 introductory classroom experiences occur, to the greatest extent possible, in classrooms that represent California's diverse student population.
- 7.4 Each prospective teacher's experiences include cooperation with at least one carefully-selected certificated classroom teacher.
- 7.5 Where feasible and appropriate, the program participates in a broad consortium, including postsecondary institutions as well as school districts that develops a regional framework for inter-institutional collaboration.

Standard 8: Diverse Perspectives

The subject matter program encourages and enables prospective multiple subject teachers to develop respect for human similarities and differences; awareness of their own perspectives pertaining to human diversity; openness to new perspectives regarding important variations among people; and critical understanding of the nature and forms of human discrimination and ways to overcome them.

Elements for Standard 8: Diverse Perspectives

Guidance to Prospective Programs

- 8.1 In accordance with the Assembly Bill 537, Chapter 587, Statutes of 1999, (see Appendix B), human differences and similarities to be examined in the program include but are not limited to those of sex, race, ethnicity, socio-economic status, religion, sexual orientation, and exceptionality. The program may also include study of other human similarities and differences.
- 8.2 In the program, prospective multiple subject teachers gain knowledge and understanding pertaining to similarities and differences between, contributions of, exchanges between, and the varying perspectives of the populations referenced in the *Non-Discrimination Policy of the State of California* (Appendix B).
- 8.3 To the greatest extent possible, program content related to Standard 8 (Diverse Perspectives) is presented in the seven major subject areas of study in the program.
- 8.4 In conjunction with Standard 7 (Introductory Classroom Experiences) and to the greatest extent possible, prospective multiple subject teachers have significant experiences with students from a variety of populations in California schools.

Standard 9: Technology in the Subject Matter Program

Study and utilization of current and emerging technologies are integral characteristics of the subject matter program for prospective multiple subject teachers.

Elements for Standard 9: Technology in the Subject Matter Program

Guidance to Prospective Programs

- 9.1 The institution provides adequate access to technology resources for prospective multiple subject teachers in the subject matter program.
- 9.2 In the program, prospective teachers use current and emerging technologies in efforts to increase their subject matter knowledge and understanding. Prospective teachers learn to use technologies for multiple applications including research, analysis, communication and presentation applications. The program selects technologies on the basis of their effective and appropriate uses.
- 9.3 To the greatest extent possible, prospective teachers in the program analyze, compare and evaluate technologies as effective tools of study and learning in the seven major subject areas of study.
- 9.4 In the program, prospective teachers are introduced to ethical and social issues related to technology, including issues of access, equity, privacy, the protection of children, and ownership of intellectual property.

Category III

Leadership and Implementation of the Subject Matter Program

Standard 10: Leadership of the Subject Matter Program

Leadership of the subject matter program is provided by one or more members of the institution's permanent faculty or academic staff. The program leadership's authority, responsibility and accountability encompass the all-university course-of-study in the program. Planning and coordination of the program include active involvement by the schools, colleges and departments that are responsible for the general education, subject matter preparation, and professional preparation of prospective multiple subject teachers. Program leaders communicate openly and cooperate fully with feeder community colleges and K-8 schools and districts.

Elements for Standard 10: Leadership of the Subject Matter Program

Guidance to Prospective Programs

- 10.1 Leadership of the subject matter program has the consistent support of the institution's academic leadership and faculty.
- 10.2 Departments responsible for instruction in the major subject areas cooperate with the program's leadership.
- 10.3 Through cooperative leadership and planning, the institution achieves effective articulation among general education, subject matter preparation, and professional preparation programs for prospective multiple subject teachers.

Standard 11: Resources for the Subject Matter Program

The institution of postsecondary education provides sufficient human, fiscal and physical resources for effective leadership, planning, direction, implementation, coordination and review of the subject matter program for prospective multiple subject teachers, including resources for advising prospective teachers, arranging their introductory classroom experiences, assessing their subject matter competence, and collaborating with local schools, school districts and community colleges.

Elements for Standard 11: Resources for the Subject Matter Program

Guidance to Prospective Programs

- 11.1 In conjunction with Standard 4 (Integrative Study), the institution allocates sufficient resources for the collaboration of subject matter faculty in the design and delivery of one or more integrative study components in the program.
- 11.2 In conjunction with Standard 6 (Assessment of Subject Matter Competence), sufficient resources support the design, development and implementation of a comprehensive assessment of subject matter competence by prospective teachers in the program.
- 11.3 In conjunction with Standard 7 (Introductory Classroom Experiences), sufficient resources support planning, conducting and coordinating field observations and experiences.
- 11.4 In conjunction with Standard 10 (Leadership of the Program), sufficient resources support the effective leadership of the subject matter program for prospective multiple subject teachers.
- 11.5 In conjunction with Standard 12 (Advising Prospective Teachers), the institution allocates sufficient resources for designated members of the faculty and/or staff to advise prospective multiple subject teachers about program and credential

requirements and options, and to determine the acceptability of coursework completed at other institutions by resident students and potential transfer students.

- 11.6 In conjunction with Standard 13 (Program Review and Development), the institution allocates sufficient resources for faculty and staff to implement a comprehensive, ongoing system of periodic program review.

Standard 12: Advising Prospective Multiple Subject Teachers

The subject matter program includes a system for identifying and advising prospective multiple subject teachers, which comprehensively and effectively addresses the distinct needs and interests of resident students and transfer students.

Elements for Standard 12: Advising Prospective Multiple Subject Teachers

Guidance to Prospective Programs

- 12.1 The sponsoring institution seeks to identify prospective K-8 teachers on the campus, and encourages their group identification, peer support and program completion.
- 12.2 Prospective multiple subject teachers regularly have access to advisement regarding their academic progress, orientation to career prospects in teaching, awareness of alternative paths into teaching, and information about specific qualifications needed for various teaching assignments (e.g., teaching English learners and students with special needs).
- 12.3 The subject matter program facilitates the transfer of prospective teachers among postsecondary institutions, including community colleges, by effective outreach and advising, and through the articulation of courses and requirements. The sponsoring institution works cooperatively with community colleges to ensure that subject matter coursework at feeder campuses is aligned with the *Content Specifications* (Appendix A) and articulated with coursework in the program.
- 12.4 The sponsoring institution establishes clear and reasonable criteria that enable qualified personnel to evaluate coursework and/or fieldwork that prospective and matriculated students have completed previously to determine whether it satisfies the requirements of the subject matter program.

Standard 13: Program Review and Development

The institution implements a comprehensive, ongoing system for periodically reviewing and improving the subject matter program for prospective multiple subject teachers. Each review addresses the educational goals and purposes of the program, including those reflected in Program Standard 1. In each review, program participants provide information and contribute to decisions. Each review leads to substantive improvements in the subject matter program, as needed.

Elements for Standard 13: Program Review and Development

Guidance to Prospective Programs

- 13.1 Each periodic review of the program examines its goals, design, curriculum, requirements, technology uses, advising services, assessment procedures and program outcomes for prospective multiple subject teachers. Each review also examines the quality and effectiveness of collaborative partnerships with K-12 schools and community colleges.
- 13.2 In each review, information is collected about the subject matter program's strengths, weaknesses and needed improvements from participants in the program, who have subsequent opportunities to examine review findings and contribute to program decisions. Participants include faculty members, current students, recent graduates, employers of recent graduates, and appropriate community college and public school personnel, including multiple subject teachers of Grades K-8.
- 13.3 Program improvements are adopted and implemented after thoughtful consideration of the results of each review, the summative assessments of students in the program, current curriculum policies of California for Grades K-8, and recent developments in the disciplines of knowledge.

Appendix A

Content Specifications for the Subject Matter Requirement for the Multiple Subject Teaching Credential

Content Specifications in Reading, Language, and Literature

Domain 1: Reading, Language, and Literature

- 1.1 Language Structure and Linguistics.** Candidates for Multiple Subject Teaching Credentials are able to identify and demonstrate an understanding of the fundamental components of human language, including phonology, morphology, syntax, and semantics, as well as the role of pragmatics in using language to communicate. In the context of these components, they reflect on both the potential for differences among languages and the universality of linguistic structures. Candidates can demonstrate knowledge of phonemic awareness (e.g., the processes of rhyming, segmenting, and blending). They apply knowledge of similarities and differences among groups of phonemes (e.g., consonants and vowels) that vary in their placement and manner of articulation. Candidates know the differences between phoneme awareness and phonics. They know the predictable patterns of sound-symbol and symbol-sound relationships in English (the Alphabetic Principle). Candidates identify examples of parts of speech, and their functions, as well as the morphology contributing to their classification. They recognize and use syntactic components (such as phrases and clauses, including verbals) to understand and develop a variety of sentence types (e.g., simple, compound, and complex sentences).
- 1.2 Language Development and Acquisition.** Candidates for Multiple Subject Teaching Credentials apply knowledge of both the development of a first language and the acquisition of subsequent ones. They can describe the principal observable milestones in each domain, and identify the major theories that attempt to explain the processes of development and acquisition. Candidates demonstrate that they understand the range of issues related to the interaction of first languages and other languages. They are able to recognize special features that may identify a pupil's language development as exceptional, distinguishing such features from interlanguage effects.
- 1.3 Literacy.** Candidates for Multiple Subject Teaching Credentials understand and use the major descriptions of developing literacy. Across the continuum of English language acquisition, candidates can identify the progressive development of phonemic awareness, decoding, comprehension, word recognition, and spelling (including its complexities related to the interaction of phonology, the alphabetic principle, morphology, and

etymology). Candidates understand how these processes interact with the development of concepts, of vocabulary (including relationships among etymologies and both denotative and connotative word meanings), and of contextual analysis. Candidates can identify indicators of reading fluency (i.e., accuracy, rate, and prosody). They understand interrelationships between decoding, fluency, vocabulary knowledge, and reading comprehension, and they can identify factors that affect comprehension.

- 1.4 Assessment.** In assessing developing literacy, candidates for Multiple Subject Teaching Credentials apply knowledge of the implications that language development and language differences have for the processes of learning to read and reading to learn. They know and apply a range of assessment methods and instruments to the respective and interrelated developing abilities in listening, speaking, reading (decoding and comprehension), writing, vocabulary, and spelling conventions.

Domain 2: Non-Written and Written Communication

- 2.1 Conventions of Language.** Applying their knowledge of linguistic structure, candidates for Multiple Subject Teaching Credentials identify and use the conventions associated with Standard English. They recognize, understand, and use a range of conventions in both spoken and written English, including varieties of sentence structure, preferred usage, and conventions of spelling, capitalization, and punctuation.

- 2.2 Writing Strategies.** Candidates for Multiple Subject Teaching Credentials demonstrate knowledge of the stages of the writing process. They understand the purpose and technique of various prewriting strategies for organizing and giving focus to their writing (e.g., outlining, using graphic organizers, notetaking). Candidates develop and strengthen writing as needed by revising, editing, rewriting, or trying a new approach. They draw upon their understanding of principles of organization, transitions, point-of-view, word choice, and conventions to produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. Candidates demonstrate the ability to use technology, including the Internet, to produce and publish individual or shared writing products.

- 2.3 Writing Applications.** Candidates for Multiple Subject Teaching Credentials demonstrate knowledge of principles of composition such as appropriate structure, logical development of ideas, appropriate vocabulary, and context. Candidates compose and/or analyze writing in different genres, including arguments, informative/explanatory texts, and narratives, as well as summaries, letters, and research reports. Candidates demonstrate the ability to write arguments to support claims using valid reasoning and relevant and sufficient evidence. Candidates demonstrate the ability to write informative/explanatory texts, including career development documents (e.g., business letters, job applications), and to examine and convey ideas, concepts, and information through the effective selection, organization, and analysis of content. When writing an argument or informative/explanatory text, candidates draw evidence from literary and/or informational texts to support research, analysis, and reflection. Candidates demonstrate

the ability to write narratives to develop real or imagined experiences or events using effective technique, relevant descriptive details, and well-structured event sequences.

2.4 Non-Written Communication. Candidates for Multiple Subject Teaching Credentials demonstrate knowledge of non-written genres and traditions (storytelling), and of their characteristics (e.g., organization), including narratives, persuasive pieces, research presentations, poetry recitations, and responses to literature. Candidates analyze the purpose of information presented in diverse media and formats (e.g., visually, quantitatively, orally) and evaluate the motives (e.g., social, commercial, political) behind its presentation. They demonstrate the ability to delineate a speaker's argument and specific claims, evaluating the soundness of the speaker's reasoning and the relevance and sufficiency of evidence presented. They apply understanding of language development stages, from pre-production (beginning) to intermediate fluency, to plan instruction according to children's developing abilities in such areas. Candidates analyze speech in terms of vocal characteristics (e.g., volume), fluency, and pronunciation (unrelated to accent or dialect). They identify the integration of nonverbal components (e.g., gesture, eye contact) with verbal elements (e.g., tone, volume). Candidates demonstrate knowledge of dialects, idiolects, and changes in what is considered standard oral English usage and their effects on perceptions of speaker performance, with attention to the dangers of stereotyping and bias. They demonstrate the ability to adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. Candidates demonstrate knowledge of techniques and strategies for initiating and engaging effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners, building on others' ideas and expressing their own clearly.

2.5 Research to Build and Present Knowledge. Candidates for Multiple Subject Teaching Credentials demonstrate the ability to gather relevant information from multiple authoritative print and digital research sources. They assess the credibility and accuracy of each source. They interpret their research findings and interpretations to construct their own reports and narratives and present claims and findings (e.g., argument, narrative, response to literature), emphasizing salient points in a focused, coherent manner with relevant evidence, reasoning, and details. Candidates accurately paraphrase the data and conclusions of others without plagiarizing. They understand the importance of citing research sources, using recognizable and accepted conventions for doing so. They demonstrate knowledge of effective strategies for integrating technology, multimedia, and visual displays into presentations to clarify information, strengthen claims and evidence, and add interest. Candidates demonstrate knowledge of appropriate and effective use of eye contact, vocal elements (e.g., volume, rate, pitch), and clear pronunciation when presenting claims and findings.

Domain 3: Reading Comprehension and Analysis

3.1 Reading Literature. Candidates for Multiple Subject Teaching Credentials analyze works from different literary genres (e.g., novels, short stories, folktales and fairy tales, poems)

as they are represented in diverse cultures, with special attention to children's literature, for both literary elements and structural features. They cite thorough textual evidence to support analysis of the explicit and implicit meaning of literary texts. When reading literary texts, they determine themes or central ideas, including those derived from cultural patterns and symbols found in rituals, mythologies, and traditions. Candidates analyze how dialogue and incidents in a work of fiction or drama move the action forward and/or reveal aspects of character. Candidates identify and evaluate literary devices in prose and poetry (e.g., rhyme, metaphor, alliteration). Candidates determine the meaning of words and phrases as they are used in literary texts, including figurative and connotative meanings. They analyze the impact of specific word choices on meaning and tone. They examine how an author's choices concerning structure contribute to a literary text's meaning and style. Candidates analyze how differences in the points of view of characters and the audience or reader create such effects as suspense or humor.

3.2 Reading Informational Text. Candidates for Multiple Subject Teaching Credentials analyze the structure, organization, and purpose of informational texts. Candidates use thorough textual evidence to support analysis of the explicit and implicit meanings of texts. They demonstrate the ability to determine the central idea of an informational text and to analyze its development over the course of a text, including its relationship to supporting ideas. Candidates demonstrate the ability to provide an objective summary of an informational text, using academic language as appropriate. They determine the meaning of words and phrases as they are used in informational texts, including figurative, connotative, and technical meanings. They analyze the impact of specific word choices on meaning and tone, including analogies or allusions to other texts. Candidates demonstrate an understanding of how the structure of informational texts, including popular print and digital media, is used to develop and refine key concepts. They analyze the use of text features (e.g., graphics, headers, captions) in consumer materials. Candidates determine an author's point(s) of view and purpose(s) and analyze how the author acknowledges and responds to conflicting evidence or viewpoints. Candidates integrate and evaluate multiple sources of information presented in different media or formats, as well as in words. They evaluate the structure and purpose of visual text features such as graphics, illustrations, data, and maps. Candidates recognize and analyze instances of bias and stereotyping in informational texts.

3.3 Text Complexity. Candidates for Multiple Subject Teaching Credentials evaluate text complexity using quantitative tools and measures, as well as knowledge of qualitative dimensions such as levels of meaning, structure, language conventionality and clarity, and background knowledge demands. Candidates apply knowledge of text complexity to select appropriate texts for supporting student learning goals. When matching readers to a text and task, candidates apply knowledge of reader variables (e.g., language, culture, motivation, background knowledge, skill levels, and experiences), and of task variables such as purpose and complexity.

Glossary of Specialized Terms: Content Specifications in Reading, Language and Literature

Specialized Terms	Definitions of Specialized Terms
Pragmatics	The system of principles and assumptions for using language and related gestures communicatively in social contexts; also, the study of language use for the discovery of this rule system.
Idiolect	The linguistic system (language forms, structures, and styles) used by an individual; distinguished from the term <i>dialect</i> , which refers to linguistic systems characteristic of communities.
Morphology	The study of meaningful units of language and how their patterns of distribution contribute to the forms and structure of words; distinct from <i>etymology</i> , which is the study of the historical and cultural origins of words.
Phoneme awareness	The conscious awareness that words and utterances are made up of segments of our own speech that are represented with letters in an alphabetic orthography; also called <i>phonemic awareness</i> .
Phonics	An approach to the study of the relationships between letters and the sounds they represent; also used to describe reading instruction that teaches sound-symbol correspondences, such as “the phonics approach.”
Phonology	The rule system within a language by which phonemes are sequenced, patterned and uttered to represent meanings; also, the study of this rule system.
Prosody	The rhythmic and tonal aspects of speech: the "music" of oral language; prosodic features are variations in pitch (intonation), stress patterns (syllable prominence), and duration (length of time) that contribute to expressive reading of a text.

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Content Specifications in History and Social Science

Part I: Content Domains for Subject Matter Understanding and Skill in History and Social Science

Domain 1: World History

- 1.1 Ancient Civilizations.** Candidates for Multiple Subject Teaching Credentials trace the impact of physical geography on the development of ancient civilizations (i.e., Mesopotamian, Egyptian, Kush, Hebrew, Greek, Indian, Chinese, and Roman civilizations). They identify the intellectual contributions, artistic forms, and traditions (including the religious beliefs) of these civilizations. They recognize patterns of trade and commerce that influenced these civilizations.
- 1.2 Medieval and Early Modern Times.** Candidates for Multiple Subject Teaching Credentials describe the influence of physical geography on the development of medieval and early modern civilizations (i.e., Chinese, Japanese, African, Arabian, Mesoamerican, Andean Highland, and European civilizations). They trace the decline of the Western Roman Empire and the development of feudalism as a social and economic system in Europe and Japan. They identify the art, architecture, and science of Pre-Columbian America. Candidates describe the role of Christianity in medieval and early modern Europe, its expansion beyond Europe, and the role of Islam and its impact on Arabia, Africa, Europe and Asia. They trace the development of the Renaissance and Scientific Revolution in Europe. They define the development of early modern capitalism and its global consequences. They describe the evolution of the idea of representative democracy from the Magna Carta through the Enlightenment.

Domain 2: United States History

- 2.1 Early Exploration, Colonial Era, and the War for Independence.** Candidates for Multiple Subject Teaching Credentials identify and describe European exploration and settlement, and the struggle for control of North America during the Colonial Era, including cooperation and conflict among American Indians and new settlers. They identify the founders and discuss their religious, economic and political reasons for colonization of North America. They describe European colonial rule and its relationship with American Indian societies. Candidates describe the development and institutionalization of African slavery in the western hemisphere and its consequences in Sub-Saharan Africa. They describe the causes of the War

for Independence, elements of political and military leadership, the impact of the war on Americans, the role of France, and the key ideas embodied within the Declaration of Independence.

2.2 The Development of the Constitution and the Early Republic. Candidates for Multiple Subject Teaching Credentials describe the political system of the United States and the ways that citizens participate in it through executive, legislative and judicial processes. They define the Articles of Confederation and the factors leading to the development of the U.S. Constitution, including the Bill of Rights. They explain the major principles of government and political philosophy contained within the Constitution, especially separation of powers and federalism. Candidates trace the evolution of political parties, describe their differing visions for the country, and analyze their impact on economic development policies. They identify historical, cultural, economic and geographic factors that led to the formation of distinct regional identities. They describe the westward movement, expansion of U.S. borders, and government policies toward American Indians and foreign nations during the Early Republic. They identify the roles of Blacks (both slave and free), American Indians, the Irish and other immigrants, women and children in the political, cultural and economic life of the new country.

2.3 Civil War and Reconstruction. Candidates for Multiple Subject Teaching Credentials recognize the origin and the evolution of the anti-slavery movement, including the roles of free Blacks and women, and the response of those who defended slavery. They describe evidence for the economic, social and political causes of the Civil War, including the constitutional debates over the doctrine of nullification and secession. They identify the major battles of the Civil War and the comparative strengths and weaknesses of the Union and the Confederacy. They describe the character of Reconstruction, factors leading to its abandonment, and the rise of Jim Crow practices.

2.4 The Rise of Industrial America. Candidates for Multiple Subject Teaching Credentials recognize the pattern of urban growth in the United States, the impact of successive waves of immigration in the nineteenth century, and the response of renewed nativism. They understand the impact of major inventions on the Industrial Revolution and the quality of life.

Domain 3: California History

3.1 The Pre-Columbian Period through the Gold Rush. Candidates for Multiple Subject Teaching Credentials identify the impact of California's physical geography on its history. They describe the geography, economic activities, folklore and religion of California's American Indian peoples. They discuss the impact of Spanish exploration and colonization, including the mission system and its influence on the development of the agricultural economy of early California.

They describe Mexican rule in California. They state the causes of the war between Mexico and the United States and its consequences for California. They describe the discovery of gold and its cultural, social, political and economic effects in California, including its impact on American Indians and Mexican nationals.

- 3.2 Economic, Political, and Cultural Development Since the 1850's.** Candidates for Multiple Subject Teaching Credentials identify key principles of the California Constitution, including the Progressive-era reforms of initiative, referendum and recall, and they recognize similarities and differences between it and the U. S. Constitution. They identify patterns of immigration to California, including the Dust Bowl migration, and discuss their impact on the cultural, economic, social and political development of the state. They identify the effects of federal and state law on the legal status of immigrants. They describe historical and contemporary perspectives on cultural diversity in the United States and in California. Candidates understand the development and identify the locations of California's major economic activities: mining, large-scale agriculture, entertainment, recreation, aerospace, electronics and international trade. They identify factors leading to the development of California's water delivery system, and describe its relationship to California geography.

Part II: Subject Matter Skills and Abilities

Applicable to the Content Domains in History and Social Science

Candidates for Multiple Subject Teaching Credentials utilize chronological and spatial thinking. They construct and interpret timelines, tables, graphs, maps and charts. They locate places based on ordinal directions, latitude and longitude, the equator, prime meridian, the tropics, the hemispheres, time zones and the international dateline. They identify and interpret major geographical features of the earth's surface including continents and other large landmasses, mountain ranges, forested areas, grasslands, deserts and major bodies of water and rivers. They describe the cultural, historical, economic and political characteristics of world regions, including human features of the regions such as population, land use patterns and settlement patterns.

Candidates apply and explain concepts from history and social studies, including political science and government, geography, economics, demography, anthropology, philosophy, and sociology.

They explain basic concepts of:

- political science and government, including political institutions, power and authority, monarchy, totalitarianism, republicanism, democracy, limited government, and the roles and responsibilities of citizenship;

- geography, including maps and globes, places and regions, the earth's physical and human systems, human settlement and migration, spatial relationships, cultural diffusion, and human-environment interactions;
- economics, including scarcity, opportunity cost, the operation of supply and demand, the circular flow model of economic exchanges, the business cycle, fiscal and monetary policy, and international trade and economic globalization;
- demography, including factors associated with human migration;
- anthropology, including the nature and content of culture and the historical and cultural development of human society, including hunting and gathering, nomadic pastoralism, domestication of plants and animals, and the creation and evolution of human settlements and cities;
- philosophy (including religion and other belief systems) and its impact on history and society; and
- sociology related to individuals; interpersonal relationships; institutions, including family and community; and social structure, including occupation, socio-economic class, ethnicity, and gender.

Candidates for Multiple Subject Teaching Credentials analyze, interpret and evaluate research evidence in history and the social sciences. They interpret primary and secondary sources, including written documents, narratives, photographs, art and artifacts revealed through archeology. In relation to confirmed research evidence they assess curricular materials and contrast differing points of view on historic and current events.

Candidates determine the meaning of academic language as used in a text, including analyzing how an author uses and refines the meaning of a key term over the course of a text. They analyze in detail how a complex primary source is structured, including how key sentences, paragraphs, and larger portions of the text contribute to the whole.

Candidates for Multiple Subject Teaching Credentials determine the central ideas or information of a primary or secondary source and provide an accurate summary that makes clear the relationships between key details and ideas. They are able to cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole. Candidates evaluate various explanations for actions or events and determine which explanation is best supported by textual evidence and they acknowledge where the text leaves matters uncertain.

Candidates evaluate multiple sources of information presented in diverse formats and media. They integrate information from diverse primary and secondary sources into a coherent understanding of an idea or event, noting discrepancies between sources.

Candidates evaluate authors' differing points of view on the same historical event or issue by assessing the author's premises, claims, reasoning, and evidence by corroborating or challenging them with other information.

In the interpretation of historical and current events, candidates identify, explain and discuss multiple causes and effects. They recognize the differing ramifications of historical and current events for people of varying ethnic, racial, socio-economic, cultural and gender backgrounds.

Candidates for Multiple Subject Teaching Credentials write arguments that introduce and develop precise, knowledgeable claims and counterclaims, and prepare informative/explanatory texts, including the narration of historical events. Candidates are able to introduce a topic and organize complex ideas, concepts, and information into a unified whole. They select significant and relevant facts, definitions, details, and examples to develop their topic; use precise language and varied transitions and sentence structures to link major sections of a text, create cohesion, and clarify the relationships between ideas; and provide a concluding statement or section that follows from and supports the information or explanation provided.

Content Specifications in Mathematics

Part I: Content Domains for Subject Matter Understanding and Skill in Mathematics

Domain 1: Number Sense

1.1 Numbers, Relationships Among Numbers, and Number Systems. Candidates for Multiple Subject Teaching Credentials understand base ten place value, number theory concepts (e.g., greatest common factor), and the structure of the whole, integer, rational, and real number systems. They order real numbers, including integers, mixed numbers, rational numbers (e.g., fractions, decimals, percents) and irrational numbers on a number line. They represent and perform operations on numbers in exponential and scientific notation. They describe the relationships between the algorithms for addition, subtraction, multiplication, and division. They understand properties of number systems and their relationship to the algorithms, [e.g., 1 is the multiplicative identity; $27 + 34 = 2 \times 10 + 7 + 3 \times 10 + 4 = (2 + 3) \times 10 + (7 + 4)$]. Candidates perform operations with positive, negative, and fractional exponents, as they apply to whole numbers and fractions.

1.2 Computational Tools, Procedures, and Strategies. Candidates demonstrate fluency in standard algorithms for computation and evaluate the correctness of nonstandard algorithms. They demonstrate an understanding of the order of operations. They round numbers, estimate the results of calculations, and place numbers accurately on a number line. They demonstrate the ability to use technology, such as calculators or software, for complex calculations.

Domain 2: Algebra and Functions

2.1 Patterns and Functional Relationships. Candidates represent patterns, including relations and functions, through tables, graphs, verbal rules, or symbolic rules. They use proportional reasoning such as ratios, equivalent fractions, and similar triangles, to solve numerical, algebraic, and geometric problems. They use mathematics to represent and analyze quantitative relationships between dependent and independent variables in real-world problems.

2.2 Linear and Quadratic Equations and Inequalities. Candidates are able to find equivalent expressions for equalities and inequalities, explain the meaning of symbolic expressions (e.g., relating an expression to a situation and vice versa), find the solutions, and represent them on graphs. They recognize and create equivalent algebraic expressions (e.g., $2(a+3) = 2a + 6$), and represent geometric problems algebraically (e.g., the area of a triangle). They use mathematics to solve real-world problems using numerical and algebraic expressions and equations. Candidates have a basic understanding of linear equations and their properties (e.g., slope, perpendicularity); the multiplication, division, and factoring of polynomials; and graphing and solving quadratic equations through factoring and completing the square. They interpret graphs of linear and quadratic equations and inequalities, including solutions to systems of equations.

Domain 3: Measurement and Geometry

3.1 Two- and Three-dimensional Geometric Objects. Candidates for Multiple Subject Teaching Credentials understand characteristics of common two- and three-dimensional figures, such as triangles (e.g., isosceles and right triangles), quadrilaterals, and spheres. They are able to draw conclusions based on the congruence, similarity, or lack thereof, of two figures. They identify different forms of symmetry, translations, rotations, and reflections. They understand the Pythagorean theorem and its converse. They are able to work with properties of parallel lines.

3.2 Representational Systems, Including Concrete Models, Drawings, and Coordinate Geometry. Candidates use concrete representations, such as manipulatives, drawings, and coordinate geometry to represent geometric objects. They construct basic geometric figures using a compass and straightedge, and represent three-dimensional objects through two-dimensional drawings. They combine and dissect two- and three-dimensional figures into familiar shapes, such as dissecting a parallelogram and rearranging the pieces to form a rectangle of equal area.

3.3 Techniques, Tools, and Formulas for Determining Measurements. Candidates estimate and measure time, length, angles, perimeter, area, surface area, volume, weight/mass, and temperature through appropriate units and scales. They identify relationships between different measures within the metric or customary systems of measurements and estimate an equivalent measurement across the two systems. They calculate perimeters and areas of two-dimensional objects and surface areas and volumes of three-dimensional objects, and use mathematics to solve real-world problems involving the volume of cones, cylinders, and spheres. They relate proportional reasoning to the construction of scale drawings or models. They use measures such as miles per hour to analyze and solve problems.

Domain 4: Statistics, Data Analysis, and Probability

- 4.1 Collection, Organization, and Representation of Data.** Candidates represent a collection of data through graphs, tables, or charts, incorporating technology as appropriate. They understand the mean, median, mode, and range of a collection of data. They have a basic understanding of the design of surveys, such as the role of a random sample.
- 4.2 Inferences, Predictions, and Arguments Based on Data.** Candidates interpret a graph, table, or chart representing a data set. They investigate patterns of association in bivariate data (e.g., linear associations, goodness of fit) in scatter plots and frequency tables. They draw conclusions about a population from a random sample, and identify potential sources and effects of bias.
- 4.3 Basic Notions of Chance and Probability.** Candidates can define the concept of probability in terms of a sample space of equally likely outcomes. They use their understanding of complementary, mutually exclusive, dependent, and independent events to calculate probabilities of simple events. They can express probabilities in a variety of ways, including ratios, proportions, decimals, and percents. They find probabilities of compound events using various representations (e.g., organized lists, tables, tree diagrams, simulations).

Part II: Subject Matter Skills and Abilities Applicable to the Content Domains in Mathematics

Candidates for Multiple Subject Teaching Credentials identify and prioritize relevant and missing information in mathematical problems. They make sense of problems and persevere in solving them. They look for and make use of structure, analyzing complex problems to identify similar simple problems that might suggest solution strategies. They model with mathematics, representing a problem in alternate ways, such as with words, symbols, concrete models, diagrams, and technology in order to gain greater insight. They consider examples and patterns as means to formulating a conjecture.

Candidates reason abstractly and quantitatively, and apply logical reasoning and techniques from arithmetic, algebra, geometry, and probability/statistics to solve mathematical problems. They look for and express regularity in repeated reasoning, use appropriate tools strategically, and analyze problems to identify alternative solution strategies. They evaluate the truth of mathematical statements (i.e., whether a given statement is always, sometimes, or never true). They apply different solution strategies (e.g., estimation) to check the reasonableness of a solution. They demonstrate whether or not a solution is correct.

Candidates explain their mathematical reasoning through a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and concrete models. They use academic language to construct viable arguments and critique the reasoning of others. They use appropriate mathematical notation with clear and accurate language, and they attend to precision. They explain how to derive a result based on previously developed ideas, and explain how a result is related to other ideas.

Content Specifications in Science

Part 1: Content Domains for Subject Matter Understanding and Skill in Science

Domain 1: Physical Science

1.1 Structure and Properties of Matter. Candidates for Multiple Subject Teaching Credentials understand the physical properties of solids, liquids, and gases, such as color, mass, density, hardness, and electrical and thermal conductivity. They know that matter can undergo physical changes (e.g., changes in state such as the evaporation and freezing of water) and chemical changes (i.e., atoms in reactants rearrange to form products with new physical and chemical properties) and understand conservation laws with respect to matter and energy. They know that matter consists of atoms and molecules in various arrangements, and can give the location and motions of the parts of an atom (protons, neutrons, and electrons). They can describe the constituents of molecules and compounds, naming common elements (e.g., hydrogen, oxygen, iron), and explain how elements are organized on the periodic table on the basis of the characteristics of atoms and their chemical properties. They can describe characteristics of solutions (such as acidic, basic, and neutral solutions) and they know examples with different pH levels, such as soft drinks, liquid detergents, and water. They know that mixtures may often be separated based on physical or chemical properties.

1.2 Principles of Motion and Energy. Candidates for Multiple Subject Teaching Credentials describe an object's motion based on position, displacement, speed, velocity, and acceleration. They know that forces (pushes and pulls), such as gravity, magnetism, and friction, act on objects and may change their motion if these forces are not in balance. They know that "like" electrical charges or magnetic poles produce repulsive forces and "unlike" charges or poles produce attractive forces. They describe simple machines in which small forces are exerted over long distances to accomplish difficult tasks (e.g., using levers or pulleys to move or lift heavy objects). Candidates identify forms of energy, including solar, wind, chemical, electrical, magnetic, nuclear, sound, light, and

electromagnetic. They know that total energy in a system is conserved but may be changed from one form to another, as in an electrical motor or generator, and that speed and energy are related. They understand the difference between heat (thermal energy) and temperature, and understand temperature measurement systems. Candidates know how heat may be transferred by conduction, convection, and radiation (e.g., involving a stove, Earth's mantle, or the sun). They describe sources of light, including the sun, lightbulbs, or excited atoms (e.g., neon in neon lights), and interactions of light with matter (e.g., vision, photosynthesis). Candidates can describe the properties of waves (e.g., wavelength, amplitude, frequency) and applications and technologies associated with these properties. They know and can apply the optical properties of waves, especially light and sound, including reflection (e.g., by a mirror) or refraction (e.g., bending light through a prism). They explain conservation of energy resources in terms of renewable and nonrenewable natural resources and their use in society

Domain 2: Life Science

2.1 Structure of Living Organisms and Their Function (Cell Biology). Candidates for Multiple Subject Teaching Credentials describe levels of hierarchical organization and related functions in plants and animals, including organ systems (e.g., the digestive system), organs, tissues (e.g., ovules in plants, heart chambers in humans), cells, and subcellular organelles (e.g., nucleus, chloroplast, mitochondrion). They know structures and related functions of systems in plants and animals, such as the nervous, reproductive, respiratory, circulatory, and digestive systems. They understand the fundamental principles of chemistry underlying the functioning of biological systems (e.g., carbon's central role in living organisms, water and salt, DNA, the energetics of photosynthesis).

2.2 Living and Nonliving Components in Environments (Ecology). Candidates for Multiple Subject Teaching Credentials know that all living things are made up of cells and can describe the characteristics of many living organisms (e.g., growth, reproduction, stimulus response). They understand the basic needs of all living organisms (e.g., food, water, space) and how organisms can alter their environments to meet those needs, and can distinguish between environmental adaptations and accommodations. They describe the relationship between the number and types of organisms an ecosystem can support and relationships among members of a species and across species. They illustrate the transfer of energy and the cycling of matter through an ecosystem from sunlight through individual organisms in food chains and food webs (including primary producers, consumers, and decomposers). They identify the resources available in an ecosystem, and describe the environmental factors that support the ecosystem, such as temperature, water, and soil composition, as well as how the ecosystem

responds to changes in these factors. They identify ways in which human activities and natural processes impact the local and global climate and possible solutions to reduce adverse impacts.

2.3 Life Cycle, Reproduction, and Evolution (Genetics and Evolution). Candidates for Multiple Subject Teaching Credentials compare the characteristics of bodies of water, such as rivers, lakes, oceans, and estuaries. They describe tides and explain the mechanisms causing and modifying them, such as the gravitational attraction of the moon, sun, and coastal topography. Candidates understand the water cycle, including the properties of water and how changes in the form of water are driven by energy from the sun and gravity. They know that Earth's hydrosphere interacts with Earth's other major systems to affect Earth's surface materials and processes.

Domain 3: Earth and Space Science

3.1 The Solar System and the Universe (Astronomy). Candidates for Multiple Subject Teaching Credentials identify and describe the components of the solar system (e.g., planets, comets, asteroids) and their predictable patterns of motion around the sun. They explain time zones in terms of longitude and the rotation of Earth, and understand the reasons for changes in the observed position of the sun, moon, and stars in the sky during the course of the day and from season to season. They name and describe bodies in the universe (e.g., sun, stars, galaxies) in terms of apparent brightness and/or relative size.

3.2 The Structure and Composition of the Earth (Geology). Candidates for Multiple Subject Teaching Credentials describe the formation and observable physical characteristics of minerals (e.g., quartz, calcite, hornblende, mica, common ore minerals) and different types of rocks (i.e., sedimentary, igneous, and metamorphic). They identify characteristics of landforms, such as mountains, rivers, deserts, and oceans. They explain chemical and physical weathering, erosion, deposition, and other rock-forming and soil-changing processes and the formation and properties of different types of soils and rocks. They describe layers of the earth (crust, lithosphere, mantle, and core) and plate tectonics, including its convective source. They explain how mountains are created, identify the factors that cause volcanoes and earthquakes to occur, and describe the effect of these phenomena on the earth's surface, ecosystems, and human society. They know the commonly cited evidence supporting the theory of plate tectonics. They identify factors influencing the location and intensity of earthquakes. They describe the effects of plate tectonic motion over time on climate, geography, and distribution of organisms, as well as more general changes on the earth over geologic time as evidenced in landforms and the rock and fossil records, including plant and animal extinction. They identify potential

technological solutions to reduce the impact of these natural Earth processes on humans and society and to reduce human impact on Earth's processes.

3.3 The Earth's Atmosphere (Meteorology). Candidates for Multiple Subject Teaching Credentials explain the influence and role of the sun and oceans in weather and climate and the role of the water cycle. They describe causes and effects of air movements and ocean currents (based on convection of air and water) on daily and seasonal weather and on climate. They describe the importance of technology with regard to predicting and mitigating the impact of severe weather and other natural hazards.

3.4 The Earth's Water (Oceanography). Candidates for Multiple Subject Teaching Credentials compare the characteristics of bodies of water, such as rivers, lakes, oceans, and estuaries. They describe tides and explain the mechanisms causing and modifying them, such as the gravitational attraction of the moon, sun, and coastal topography. Candidates understand the water cycle, including the properties of water and how changes in the form of water are driven by energy from the sun and gravity. They know that Earth's hydrosphere interacts with Earth's other major systems to affect Earth's surface materials and processes.

Part II: Subject Matter Skills and Abilities **Applicable to the Content Domains in Science**

Candidates for Multiple Subject Teaching Credentials know how to plan and conduct a scientific investigation to test a hypothesis, including:

- using print and electronic resources for preparation and research;
- applying the principles of experimental design, including formulation of testable questions and hypotheses, and evaluation of the accuracy and reproducibility of data;
- distinguishing between dependent and independent variables and controlled parameters, and between linear and nonlinear relationships on a graph of data;
- using academic language appropriately (e.g., observation, organization, experimentation, inference, prediction, evidence, opinion, hypothesis, theory, law);
- following precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks;
- analyzing experimental results according to explanations in a text; and
- communicating accurately the steps and results of a scientific investigation in both verbal and written formats.

Candidates select and use a variety of scientific tools. They know how to record length, mass, and volume measurements using the metric system. They interpret results of experiments and interpret events by sequence and time (e.g., relative age of rocks,

phases of the moon) from evidence of natural phenomena. They communicate the steps in an investigation, record data, and interpret and analyze numerical and non-numerical results using charts, maps, tables, models, graphs, and labeled diagrams.

Candidates integrate and evaluate multiple sources of information presented in diverse formats and media in order to address a question or solve a problem. They analyze a scientific or technical text to determine the central ideas or conclusions and accurately summarize complex information, concepts, and processes in a text by paraphrasing them in simpler terms. Candidates cite specific textual evidence to support analysis of scientific and technical texts, recognizing gaps or inconsistencies that may exist in the text.

Candidates analyze how informational texts structure the subject matter into categories and hierarchies. They determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in grade-level scientific and technical contexts. They analyze the author's purpose in presenting specific information in a text or passage.

Candidates evaluate hypotheses, data, analysis, and conclusions in a scientific or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information. They synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept.

Content Specifications in Visual and Performing Arts

Part I: Content Domains for Subject Matter Understanding and Skill in Visual and Performing Arts

In the visual and performing arts, candidates for the Multiple Subject Teaching Credential identify the components of the *State Curriculum Framework* and the strands of the *California Student Academic Content Standards* in the Visual and Performing Arts:

1. Artistic Perception - processing sensory information
2. Creative Expression - producing works in the arts
3. Historical and Cultural Context - the time and place of creation of works of art
4. Aesthetic Valuing - pursuing meaning in the arts
5. Connections, Relationships, Applications

Domain 1: Dance

Candidates for Multiple Subject Teaching Credentials identify the components and strands of dance education found in the *Visual and Performing Arts Framework and Student Academic Content Standards*. They demonstrate a basic fluency with the elements of dance such as space, time, levels, and force/energy. They use basic techniques to create dance/movement with children.

Candidates, while grounded in the elements of dance, are able to identify and explain styles of dance from a variety of times, places, and cultures. They are able to make judgments about dance works based on the elements of dance.

Domain 2: Music

Candidates for Multiple Subject Teaching Credentials understand the components and strands of music education found in the *Visual and Performing Arts Framework and Student Academic Content Standards*. They demonstrate a basic fluency with the elements of music such as pitch, rhythm, and timbre and music concepts, including music notation. They use basic techniques to create vocal and instrumental music with children.

Candidates are able to identify and explain styles and types of music and instruments from a variety of times, places, and cultures. They are able to make judgments about musical works based on the elements and concepts of music.

Domain 3: Theatre

Candidates for Multiple Subject Teaching Credentials identify the components and strands of theatre education found in the *Visual and Performing Arts Framework and*

Student Academic Content Standards. They demonstrate a basic fluency in acting, directing, design, and scriptwriting (plot and action). They can apply these elements and principles in order to create dramatic activities with children including improvisation and character development.

Candidates are able to identify and explain styles of theatre from a variety of times, places, and cultures. They are able to make judgments about dramatic works based on the elements of theatre.

Domain 4: Visual Art

Candidates for Multiple Subject Teaching Credentials identify the components and strands of visual arts education found in the *Visual and Performing Arts Framework and Student Academic Content Standards*. They demonstrate a basic fluency with the principles of art such as balance, repetition, contrast, emphasis, and unity and are able to explain how works of art are organized in terms of line, color, value, space, texture, shape, and form.

Candidates are able to identify and explain styles of visual arts from a variety of times, places, and cultures. They interpret works of art to derive meaning and are able to make judgments based on the principles of art as they are used to organize line, color, value, space, texture, shape, and form in works of art.

Part II: Subject Matter Skills and Abilities

Applicable to the Content Domains in the Visual and Performing Arts

- (A) Candidates for Multiple Subject Teaching Credentials are able to make informed judgments about the quality of works in the arts based on the elements, principles, and/or concepts of the art form. They develop criteria for their judgments and justify their interpretations with plausible reasoning.
- (B) Candidates analyze the components and strands of the *Visual and Performing Arts Framework and Student Academic Content Standards*, and examine the connections among them.
- (C) Candidates consider the origins, meaning, and significance of works in the visual and performing arts; raise questions that have been asked by people, past and present; and determine how their responses have varied in significant ways over the years.
- (D) Candidates are able to consider, weigh, and express ideas about aesthetic issues in the visual and performing arts.

Content Specifications in Physical Education

Part I: Content Domains for Subject Matter Understanding and Skill in Physical Education

Domain 1: Movement Skills and Movement Knowledge

- 1.1 Basic Movement Skills.** Candidates for Multiple Subject Teaching Credentials can identify movement concepts including body awareness, space awareness, and movement exploration. They can list locomotor skills such as skipping, nonlocomotor skills such as static balancing, and object manipulation such as catching. They can recognize basic concepts of biomechanics that affect movement, such as how the body moves and how such movement is influenced by gravity, friction, and the laws of motion. They can describe critical elements of basic movement skills, such as stepping in opposition when throwing and/or following through when kicking a ball.
- 1.2 Exercise Physiology: Health and Physical Fitness.** Candidates for Multiple Subject Teaching Credentials can identify health and fitness benefits and associated risks, supporting a physically active lifestyle, related to safety and medical factors (e.g., asthma, diabetes). They recognize exercise principles such as frequency, intensity, and time to select activities that promote physical fitness. They can describe physical fitness components, such as flexibility, muscular strength and endurance, cardiorespiratory endurance, and body composition, which are included in comprehensive personal fitness development programs.
- 1.3 Movement Forms: Content Areas.** Candidates for Multiple Subject Teaching Credentials know a variety of traditional and nontraditional games, sports, dance, and other physical activities. They are able to cite basic rules and social etiquette for physical activities. They can select activities for their potential to include all students regardless of gender, race, culture, religion, abilities, or disabilities. They integrate activities with other content areas, such as math and science.

Domain 2: Self-Image and Personal Development

- 2.1 Physical Growth and Development.** Candidates for Multiple Subject Teaching Credentials identify the sequential development of fine and gross motor skills in children and young adolescents. They describe the influence of growth spurts (changes in height and weight) and body type on movement and coordination. They recognize the impact of factors such as exercise, relaxation, nutrition, stress, and substance abuse on physical health and general well-being.
- 2.2 Self-Image.** Candidates for Multiple Subject Teaching Credentials discover the role of physical activity in the development of a positive self-image, and how psychological skills such as goal setting are selected to promote lifelong participation in physical activity.

Domain 3: Social Development

- 3.1 Social Aspects of Physical Education.** Candidates for Multiple Subject Teaching Credentials recognize individual differences such as gender, race, culture, ability, or disability. They describe the developmental appropriateness of cooperation, competition, and responsible social behavior for children of different ages. They list activities to provide opportunities for enjoyment, self-expression, and communication.
- 3.2 Cultural and Historical Aspects of Movement Forms.** Candidates for Multiple Subject Teaching Credentials understand the significance of cultural and historical influences on games, sports, dance, and other physical activities.

Part II: Subject Matter Skills and Abilities Applicable to the Content Domains in Physical Education

Candidates for Multiple Subject Teaching Credentials understand the key factors in the development, analysis, and assessment of basic motor skills. They understand how to structure lessons to promote maximum participation, inclusion, and engagement in a variety of traditional and nontraditional games, sports, dance, and other physical activities. Candidates select lessons and activities based on factors such as the developmental levels of students and individual differences. They can design appropriate exercise programs and activities based on physical fitness concepts and applications that encourage physically active lifestyles. They analyze the impact of factors such as exercise, relaxation, nutrition, stress, and substance abuse on physical health and well being, and can design activities to provide opportunities for enjoyment, self-expression, and communication. Candidates create cooperative and competitive movement activities that require personal and social responsibility. They understand

the significance of cultural and historical influences on games, sports, dance, and other physical activities.

Content Specifications in Human Development

Part I: Content Domains for Subject Matter Understanding and Skill in Human Development

Domain 1: Cognitive Development from Birth Through Adolescence

1.1 Cognitive Development. Candidates for Multiple Subject Teaching Credentials define basic concepts of cognitive and moral development (e.g., reasoning, symbol manipulation, and problem solving). They identify stages in cognitive and language development and use them to describe the development of individuals, including persons with special needs. Candidates identify characteristics of play and their influence on cognitive development. They recognize different perspectives on intelligence (i.e., concepts of multiple intelligences) and their implications for identifying and describing individual differences in cognitive development.

Domain 2: Social and Physical Development from Birth Through Adolescence

2.1 Social Development. Candidates for Multiple Subject Teaching Credentials define concepts related to the development of personality and temperament (e.g., attachment, self-concept, autonomy, identity). They describe the social development of children and young adolescents, including persons with special needs. They identify characteristics of play and their impact on social development, and they describe influences on the development of prosocial behavior.

2.2 Physical Development. Candidates describe the scope of physical development at different ages. They identify individual differences in physical development, including the development of persons with special needs.

Domain 3: Influences on Development from Birth Through Adolescence

3.1 Influences on Development. Candidates for Multiple Subject Teaching Credentials identify potential impacts on the development of children and young adolescents from genetic or organic causes, sociocultural factors (e.g., family, race, cultural perspective), socioeconomic factors (e.g., poverty, class), and sex and gender. They also identify sources of possible abuse and neglect (e.g., physical, emotional and substance abuse and neglect) and describe their impact on development.

Part II: Subject Matter Skills and Abilities Applicable to the Content Domains in Human Development

Candidates for Multiple Subject Teaching Credentials apply knowledge of cognitive, social and physical development to understanding differences between individual children. They interpret similarities and differences in children's behavior with reference to concepts of human development. They use developmental concepts and principles to explain children's behavior (as described anecdotally or viewed in naturalistic settings, on videotape, etc.).

Appendix B

Glossary of Specialized Terms Used in Draft Standards of Program Quality and Effectiveness for the Subject Matter Requirement for the Multiple Subject Teaching Credential

Teacher Preparation Terms	Definitions of Specialized Terms
Beginning Teacher Induction Program	A planned set of studies, consultations and experiences designed for beginning certificated teachers for the purposes of extending their prior preparation, deepening their understanding, enhancing their ability, increasing their effectiveness and maximizing their satisfaction with teaching as a career choice.
Blended Program of Undergraduate Teacher Preparation	A planned set of subject matter courses that meet the CTC Standards of Program Quality for Subject Matter Preparation, together with a planned set of pedagogical courses and supervised teaching experiences that meet the CTC Standards of Program Quality for Professional Preparation. The two sets of courses and experiences are concurrent and connected with each other to meet the CTC Standards for Blended Programs. A prospective teacher who completes an accredited blended program has met the subject matter requirement <i>and</i> the professional preparation requirement for a teaching credential. A blended program must meet the same Standards of Program Quality for Subject Matter Preparation that are met by a program of subject matter preparation. It must meet the same Standards of Program Quality for Professional Preparation that are met by a program of professional preparation.
Certificated Classroom Teachers	Public school teachers who hold valid teaching credentials awarded by the State of California. Does not include teachers serving on pre-intern certificates, emergency permits or credential waivers, most of whom have not met the subject matter requirement for teaching credentials.
Concentration	A set of subject matter courses that meet the Depth of Study Standard (Standard 3) in an approved program of subject matter preparation, consisting of twelve or more semester units in courses that are coherently related to each other. Completion of a concentration partially fulfills the 84 unit requirement as noted in

Teacher Preparation Terms	Definitions of Specialized Terms
	Appendix C.
Core Classes	Classes in which one teacher is responsible for instruction in two subjects of the curriculum. Core classes are widespread in middle schools (Grades 6-8) where other classes are departmentalized classes. Teachers in these assignments must hold Multiple Subject Teaching Credentials, or two Single Subject Teaching Credentials, or a Single Subject Credential plus a Supplementary Authorization, or the equivalent.
Departmental Classes	Classes in which each teacher is responsible for instruction in one subject of the curriculum. Departmentalized classes are widespread in middle schools (Grades 6-8), and they predominate in high schools (Grades 9-12). All teachers in these assignments must hold Single Subject Teaching Credentials, or Supplementary Authorizations, or equivalent credentials.
Integrative Study	One or more planned components of an approved subject matter program that meet the Integrative Study Standard (page 4) by systematically examining content-specific connections among two or more of the major subject areas. Each component may consist of a course, a series of courses, portions of a series of courses, or a course with accompanying field experiences in K-8 schools.
Major Subject Areas of Study	<p>The following set of content areas in which prospective multiple-subject teachers need knowledge, skill and ability:</p> <ul style="list-style-type: none"> • Reading, Language and Literature • History and Social Science • Mathematics • Science • Visual and Performing Arts • Physical Education • Health • Human Development <p>Foundational study of these major subject areas comprises the subject matter preparation of prospective multiple-subject teachers.</p>
Multiple Subject Teaching Credentials	Credentials that authorize the holders to teach two or more subjects to the same group of students each day. These teaching assignments are of two types: self-contained classrooms and core classes.
Preconditions for Program Approval	State policies adopted by the CTC to implement requirements of law for the approval of programs. The Commission's professional staff must find that a program complies with each precondition. When they do, the program becomes eligible for an evaluation by external

Teacher Preparation Terms	Definitions of Specialized Terms
	reviewers on the basis of Standards of Program Quality and Required Elements.
Pre-Professional Studies	As used in Standard 3, Element 3, pre-professional studies are courses and field experiences that focus extensively on California school students and their backgrounds, and/or on K-12 teaching strategies.
Program of Subject Matter Preparation	A planned set of subject matter courses selected on the basis of institutional advice that (a) is offered by a regionally-accredited college or university that grants baccalaureate degrees, and (b) meets the Standards of Program Quality as determined by the CTC. A prospective teacher may meet the subject matter requirement by completing a program of subject matter preparation that meets the Standards of Program Quality. For Multiple Subject Teaching Credentials, the applicable Standards of Program Quality are published in this handbook.
Professional Preparation Requirement	A requirement in law (Education Code Section 44259) that each applicant for a teaching credential demonstrate pedagogical competence by completing an accredited program of professional preparation that includes a comprehensive assessment of teaching performance (which does not focus on subject matter knowledge).
Program of Professional Preparation	A planned set of pedagogical courses and supervised teaching experiences that has been accredited by the CTC Committee on Accreditation based on an external review in relation to Standards of Program Quality for Professional Preparation. Standards for Professional Preparation are adopted by the Commission to supplement and complement the Standards of Program Quality for Subject Matter Preparation. Programs of Professional Preparation are of two types: programs with supervised teaching and programs with internship teaching.
Program of Professional Preparation with Supervised Teaching	A program of professional preparation in which each candidate assumes daily student teaching responsibilities for at least one semester under the direct supervision of a certificated classroom teacher selected by the sponsor of the program. The student teacher holds a Certificate of Clearance that verifies personal fitness to work with students, but does not hold a teaching credential. The student teacher must have completed four-fifths of an approved program of subject matter preparation, or passed one-half of a CTC-adopted subject matter examination.
Program of Professional	A program of professional preparation in which each candidate holds an internship teaching credential or certificate and serves as the instructor-of-record in a public school classroom for one or two

Teacher Preparation Terms	Definitions of Specialized Terms
Preparation with Internship Teaching	years. In addition to the Certificate of Clearance, the intern teacher holds a baccalaureate degree from a regionally-accredited institution and has met the subject matter requirement. The school district that co-sponsors the internship teaching program provides for the on-site supervision of each intern teacher.
Prospective Multiple Subject Teachers	Individuals who intend to earn Multiple Subject Teaching Credentials that are awarded by the California Commission on Teacher Credentialing (CTC).
Self-Contained Classrooms	Classrooms in which one teacher is responsible for instruction in all (or nearly all) subjects of the curriculum. Self-contained classrooms predominate in Grades K-6 and are widespread in Grades 6-8 throughout California. All teachers in these assignments must hold Multiple Subject Teaching Credentials or equivalent credentials.
Subject Matter Requirement	A requirement in law (Education Code Section 44259) that each applicant for a teaching credential demonstrate subject matter competence by either (a) completing a program of subject matter study that meets standards of program quality adopted by the CTC, or (b) passing an examination of subject matter understanding adopted by the CTC.
Standards of Program Quality for Subject Matter Programs	State policies adopted by the CTC to describe acceptable levels of quality in programs of subject matter study that are offered by regionally-accredited colleges and universities that award baccalaureate degrees. Each standard is elaborated by Required Elements for that standard. Program reviewers selected by the CTC must find that a program meets each standard. When they do so, the CTC approves the program.
Subject Matter Examination	A comprehensive examination of the subject matter knowledge, understanding and skill of a prospective teacher that has been approved by the CTC. A prospective teacher may meet the subject matter requirement by passing a subject matter examination. For Multiple Subject Teaching Credentials, the applicable subject matter examination is the California Subject Matter Exam for Teachers (CSET).
Summative Assessment	A comprehensive evaluation of the subject matter knowledge, understanding, skill and ability of a prospective multiple-subject teacher that fulfills Standard 6: Assessment of Subject Matter Competence. While a transcript review may be part of a summative assessment, a transcript review does not (by itself) fulfill Standard 6.

Appendix C

Precondition

Elementary Subject Matter Program

Each Program of Elementary Subject Matter Preparation shall consist of a minimum of 84 semester units, or equivalent quarter units, including, but not limited to, language studies and literature; mathematics; science; social science, history, and humanities; visual and performing arts; physical education; and human development.

In addition to describing how a program meets each standard of program quality, the program document shall include a listing of all courses that constitute the required courses and the courses that may be elected in each subject area. Courses used to meet the requirements of Category I (Substance of the Subject Matter Program Curriculum) or Category II (Qualities of the Subject Matter Program Curriculum) may be counted to meet the minimum unit requirement.

Appendix D

Submission Requirements for Elementary Subject Matter Programs

The Submission requirements for Subject Matter Programs are detailed on the Commission’s Subject Matter Preparation web page: <http://www.ctc.ca.gov/educator-prep/elig-inst-new-subject.html>.

In an effort to support and increase subject matter preparation programs, the Commission has taken steps to streamline the review process for subject matter programs. Staff is also encouraging electronic submission of documents with only one complete paper copy required.

- Subject matter programs will only be held to the standard statement and do not need to address the “required elements” in the response. The “elements” are still provided as “Guidance to Prospective Programs,” but the reviewers will only use the standards in the review of the program.
- Program sponsors are encouraged to limit narrative responses to each standard to 1-2 pages, which should describe and provide specific examples of how the standard is addressed in the program.
- Program sponsors are encouraged, but not required, to use a content alignment matrix to provide information related to the content-specific program standards instead of a narrative response. Referenced on the matrix should be course numbers, key assignments and assessments, and other program documents. The alignment matrix is available at: <http://www.ctc.ca.gov/educator-prep/STDS-subject-matter.html>

For the Commission to approve an Elementary Subject Matter Program, the institution must be a Commission-approved institution in good standing. The program proposal needs to include:

- 1) a response addressing each of the 13 Program Standards—limit to about 20 pages
- 2) A listing of the courses in the program including, units, and course descriptions
- 3) A completed Alignment Matrix showing in which course the content is addressed including the key assignments and assessments
- 4) Course syllabi for the courses in the ESM program

Once the review panel has determined that a ESM program proposal meets the adopted standards, the Commission receives the recommendation to approve the ESM program.