

# **4I**

## **Action**

### ***Educator Preparation Committee***

#### **Request to Approve Emergency Regulations Language Regarding Subject Matter Competence**

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**Executive Summary:** This agenda item presents an analysis of anticipated changes to the subject matter competence requirement in Education Code section 44259 and recommended Emergency Regulation language to implement these changes.

**Recommended Action:** That the Commission review, discuss, and approve Emergency Regulation language to be submitted as part of an emergency regulation package if the anticipated Education Code changes become law on July 1, 2021.

**Presenter:** David DeGuire, Director, Professional Services Division

### **Strategic Plan Goal**

#### ***II. Program Quality and Accountability***

- a) Develop and maintain rigorous, meaningful, and relevant standards that drive program quality and effectiveness for the preparation of the education workforce and are responsive to the needs of California's diverse student population.

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## **Request to Approve Emergency Regulations Language Regarding Subject Matter Competence**

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### **Introduction**

This agenda item presents an analysis of anticipated changes to the verification of subject matter competence requirement in Education Code section 44259 and a recommended emergency regulations package to implement these changes.

### **Background**

Current Education Code (Ed Code) requires that candidates demonstrate their subject matter competence through either the completion of a Commission-approved subject matter program or passage of a Commission-approved subject matter examination. In 2019-20, approximately 81 percent of candidates used the subject matter exam option.

Candidates' opportunities to complete the examination option were significantly decreased over the past fourteen months due to the closure of testing centers because of the COVID-19 pandemic and their subsequent reopening at only 25 percent of capacity. This has added to the challenges of the shortage of fully credentialed teachers that existed prior to the pandemic. While the option to take examinations online and the expected return to full capacity at testing centers will increase access to testing, candidates' needs to take subject matter exams are expected to remain higher than the testing centers' capacity.

Actions taken by the Legislature, Governor, and the Commission on Teacher Credentialing (Commission) allowed teachers to enter and complete preparation for their Preliminary credential by deferring the demonstration of subject matter competence until the end of their preparation program. However, that flexibility has resulted in an even larger group of individuals than normal who need to pass their subject matter exams to earn their credential and enter the teaching workforce.

In this context, there is growing support for expanding options and eliminating bottlenecks in educator preparation if demonstrations of competence in another form can be accepted in lieu of a standardized examination. Providing options for prospective teachers to meet testing requirements is not unprecedented. The most prominent example of this are the various options for demonstrating basic skills beyond the California Basic Educational Skills Test (e.g., SAT, ACT, AP exams, CSU assessments).

### **Proposed Changes in State Budget Trailer Bill**

For the reasons stated above, the state budget trailer bill proposes to allow additional options for prospective teachers to demonstrate subject matter competence:

44259(b) (5) Completion of a subject matter program that has been approved by the commission on the basis of standards of program quality and effectiveness pursuant to

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~~Article 6 (commencing with Section 44310) or passage of a subject matter examination pursuant to Article 5 (commencing with Section 44280).~~

(5)(A) Verification of subject matter competence, demonstrated through one of the following methods:

(i) Completion of a subject matter program approved by the commission on the basis of standards of program quality and effectiveness pursuant to Article 6 (commencing with Section 44310).

(ii) Passage of a subject matter examination pursuant to Article 5 (commencing with Section 44280).

(iii) Successful completion of coursework at one or more regionally accredited institutions of higher education that addresses each of the domains of the subject matter requirements adopted by the commission in the content area of the credential pursuant to Section 44282, as verified by a commission-approved program of professional preparation.

(iv) Demonstration to the satisfaction of the commission that the candidate, through a combination of the methods described in clauses (ii) and (iii), has addressed each of the domains of the subject matter requirements adopted by the commission in the content area of the credential pursuant to Section 44282.

The first new option to demonstrate subject matter competence (paragraph iii above) would be through coursework that addresses all of the domains of the subject matter requirements for the subject that the candidate is authorized to teach and would be completed by an approved preparation program in consultation with content experts who would be authorized by this statutory change to evaluate a candidate's college transcripts to determine whether coursework addresses the domains of subject matter required by the Commission. See [Appendix A](#) for the subject matter domains related to Multiple Subject, Single Subject, and Education Specialist credentials.

The second new option (paragraph iv above) would allow Commission-approved programs to review both coursework and the passage of subtests from an approved subject matter examination and ensure that between the subtest(s) passed and coursework completed, all domains of the subject matter requirements had been satisfactorily demonstrated.

## **Proposed Emergency Rules**

In order to make these new options available to candidates as soon as possible, Commission staff recommends that an emergency rule package be submitted to the Office of Administrative Law (OAL) upon the Governor signing the proposed trailer bill language into law. The Governor's signature is expected no later than June 30, 2021, with the proposed changes taking effect on July 1, 2021. Administrative rules are needed to clarify how approved preparation programs should review transcripts for assessing subject matter competence.

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The emergency rulemaking process includes a brief public notice period, a brief public comment period, review by OAL, and an OAL decision. If approved by OAL, emergency regulations could be in place by the middle of August.

An emergency regulation generally remains in effect for 180 days unless OAL approves a readoption of the emergency regulation. If approved, the emergency readoption extends the emergency regulation for an additional 90 days; however, no more than two readoptions are permitted. For more information about this process, please see [OAL Emergency Regulation Process](#). Note that the regular rulemaking process would be required to make these changes permanent.

An important requirement for promulgating emergency regulations is that an emergency exist, and an “emergency” is defined as a situation that calls for immediate action to avoid serious harm to the public peace, health, safety, or general welfare. A number of factors combine to create a state of emergency necessitating this action:

- California’s teacher shortage is growing. From 2017-20 the Commission annually issued, on average, more than 5,000 intern credentials and 8,000 emergency permits and waivers, with the highest numbers issued to Education Specialists. These numbers are expected to grow over the next two years, due in part to higher than average teacher retirements.
- The California State Teachers Retirement System (CalSTRS) projects the retirement of 16,000 teachers this year, a near record high number in the last decade, and approximately 3,000 more than average.
- California educator preparation programs report increased numbers of applicants for admission in 2020-21 and 2021-22 due to the postponement of testing requirement from program entry to program completion; these candidates will not be able to recommended for a preliminary teaching credential until they demonstrate subject matter competence.
- The Legislature and Governor have established a goal of making Universal Transitional Kindergarten available to all four-year-olds by the 2025-26 school year, which will create the space for an estimated 250,000 additional students and the need for an additional 10,000 teachers in the next five years.

Taken together, these factors create an emergency situation that needs to be addressed by expediting the credentialing of well-prepared teachers beginning this fall and for the next few years. Opening pathways to meet this requirement will help keep the pipeline into teaching moving to meet the state’s growing demand.

The proposed administrative regulation language below does two things. First, it establishes requirements for a collaborative coursework review process between an approved preparation program and a subject matter expert reviewer in the form of a faculty member who holds a master’s degree or higher in the subject area of the candidate’s credential and sets a minimum grade of “C” or “Pass” for consideration of a course. Second, it identifies undergraduate majors that meet the subject matter domains for credentials. For Multiple Subject and Education

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Specialist, liberal arts and interdisciplinary degrees are identified. For Single Subjects, the proposed regulations refer to section 80005 of the California Code of Regulations, which identifies the TK-12 subjects that fall under each broad area Single Subject Teaching Credential ([Appendix B](#)). These subjects provide approved programs guidance on which majors align to the content knowledge for each Single Subject credential. Please note that the proposed language will undergo legal review by the Office of Administrative Law and may be adjusted based on that review.

- 1. Determination of subject matter competence under section 44259(b)(5)(A)(iii) of the Education Code by a commission-approved program of professional preparation must be done in consultation with one or more faculty members who hold a master's degree or higher in the subject of the credential to assess whether the candidate has demonstrated competence in each domain of the subject matter requirements through coursework and/or subtests of subject matter examinations adopted under section 44282 of the Education Code. A grade of "C" or better, "Pass," or "Credit" must be earned in each course used to demonstrate subject matter competence, each course must be non-remedial, degree-applicable, and each must have been completed at a regionally accredited institution of higher education.*
- 2. Demonstration of subject matter competence under section 44259(b)(5)(A)(iv) of the Education Code may be done in the following ways:*
  - a. For multiple subject and education specialist credentials, one of the following:*
    - i. Successful completion of a liberal arts or interdisciplinary studies baccalaureate degree at a regionally accredited institution of higher education.*
    - ii. Determination by a commission-approved program of professional preparation in consultation with one or more faculty members who hold a master's degree or higher in the subject of the credential that the candidate has demonstrated competence in each domain of the subject matter requirements through coursework and/or subtests of subject matter examinations adopted under section 44282 of the Education Code.*
      - 1. A grade of "C" or better, "Pass," or "Credit" must be earned in each course used to demonstrate subject matter competence, each course must not have been remedial, and each must have been completed at a regionally accredited institution of higher education.*
      - 2. Successful completion of higher-level coursework that has as prerequisites one or more domains of the subject matter requirements may be considered as evidence of competence in those domains.*
  - b. For single subject credentials, one of the following:*
    - i. Successful completion of a baccalaureate degree at a regionally accredited institution of higher education with a major that is directly*

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*aligned with the subjects which fall within the broad subject areas listed in section 80005.*

- ii. Determination by a commission-approved program of professional preparation in consultation with one or more faculty members who hold a master's degree or higher in the subject of the credential that the candidate has demonstrated competence in each domain of the subject matter requirements through coursework and/or subtests of subject matter examinations adopted under section 44282 of the Education Code.*
  - 1. A grade of "C" or better, "Pass," or "Credit" must be earned in each course used to demonstrate subject matter competence, each course must not have been remedial, and each must have been completed at a regionally accredited institution of higher education.*
  - 2. Successful completion of higher-level coursework that has as prerequisites one or more domains of the subject matter requirements may be considered as evidence of competence in those domains.*

## **Anticipated Impacts**

Commission staff believe the proposed emergency regulations will have the following impacts:

- Preparation programs will be able to enroll more candidates and a more diverse candidate pool who meet Commission expectations for subject matter competence to begin teacher preparation.
- Potential increase in the supply of fully credentialed teachers for districts as this provides an immediate solution for those currently in programs who need to meet subject matter competence.
- Cost savings for credential candidates who will not need to take or retake exams or who can take just one sub-test of an exam in addition to their coursework, potentially lowering the overall cost of becoming a teacher.
- A larger and more diverse corps of future teachers because they will be able to see a clearer path to a credential that does not require multiple exams.

There are two additional sets of possible longer-term impacts to note. Although preparation programs will be able to admit a more diverse pool of candidates, more program faculty and staff time may be required to review transcripts, as it is not as simple as checking for a passing exam score. While approved programs are not required to review transcripts to evaluate whether a candidate has already demonstrated subject matter competence through coursework, many candidates may expect them to do so. It is also unclear how the regulations might have an overall effect on course enrollment at institutions of higher education, including approved preparation programs and approved subject matter programs.

The second longer-term impact affects structural funding issues for the Commission. Currently, administration fees from required examinations provide a revenue source for the Commission's work. If fewer candidates need to take subject matter examinations because they have already

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demonstrated their competency in other ways, this revenue stream will likely decrease. The loss of this revenue is absorbable in the short term given the Commission's current reserves. In the long term, staff expects the provision of these additional options to contribute to an increase in the number of credentialed teachers, all of whom will pay preliminary credential fees and ongoing credential renewal fees. It is important to recognize that the CSET fee income is inflated by exam takers who retake the CSET subtests multiple times as they work toward completing the subject matter requirement. The budget language is intended to help reduce that financial burden on exam takers. Commission staff will monitor the impact of these proposed changes in statute and regulation on revenues and evaluate the overall agency revenue picture to identify needed adjustments to ensure that the agency budget is structured to support the agency's work.

One benefit of having emergency regulations in place while going through the permanent rulemaking process is that staff will be able to monitor the effects of the changes and gather additional public comment before recommending permanent regulation changes. Since emergency regulations can be in effect for no more than 360 days, the Commission will have the opportunity to address any unintended consequences of the proposed changes for candidates to demonstrate subject matter competence.

### **Staff Recommendation**

Staff recommends that the Commission approve emergency regulation language and direct staff to submit an emergency regulations package to the Office of Administrative Law upon the Governor signing the proposed budget trailer bill language regarding subject matter competence into law.

### **Next Steps**

If so directed, staff will prepare a complete emergency regulations package and submit it to the Office of Administrative Law by the end of June 2021. Staff will communicate with programs and update all candidate websites ([www.ctcexams.nesinc.com](http://www.ctcexams.nesinc.com)) and Commission websites to provide guidance and explain the range of new options for meeting the subject matter competence.

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## Appendix A

### Domains of the Subject Matter Requirements

#### Agriculture

- **Domain 1. Plant and Soil Science:** Candidates demonstrate a broad understanding of principles of plant and soil science. Candidates apply this knowledge to plan and implement programs. Candidates are able to demonstrate an understanding of a range of topics in plant and soil science, including soil science; plant nutrition and soil treatments; plant classification, anatomy, and physiology; plant genetics, reproduction, and propagation; crop production practices; and emerging technologies in plant and soil science. (CSET Subtest 1)
- **Domain 2. Ornamental Horticulture:** Candidates demonstrate a broad understanding of principles of ornamental horticulture. Candidates apply this knowledge to plan and implement programs. Candidates are able to demonstrate an understanding of a range of topics in ornamental horticulture, including greenhouse and nursery management, landscape design and management, and floriculture and floral design. (**CSET Subtest 1**)
- **Domain 3. Animal Science:** Candidates demonstrate a broad understanding of principles of animal science. Candidates apply this knowledge to plan and implement programs. Candidates are to be able to demonstrate an understanding of a range of topics in animal science, including anatomy and physiology of livestock, animal production practices, animal nutrition, animal genetics and reproduction, and animal facilities management. (CSET Subtest 2)
- **Domain 4. Environmental Science and Natural Resource Management:** Candidates demonstrate a broad understanding of principles of environmental science and natural resource management. Candidates apply this knowledge to plan and implement programs. Candidates are able to demonstrate an understanding of a range of topics in environmental science and natural resource management, including basic ecological principles and natural resources; relationships between agriculture, the environment, and society; ecosystem and resource management; and forestry. (CSET Subtest 2)
- **Domain 5. Agricultural Business and Economics:** Candidates demonstrate a broad understanding of principles of agricultural business and economics. Candidates apply this knowledge to plan and implement programs. Candidates are able to demonstrate an understanding of a range of topics in agricultural business and economics, including agricultural economics, marketing, and trade; agricultural entrepreneurship and management functions; agricultural business management; and government policies that affect agricultural businesses. (CSET Subtest 3)
- **Domain 6. Agricultural Systems Technology:** Candidates demonstrate a broad understanding of principles of agricultural systems technology. Candidates apply this knowledge to plan and implement programs. Candidates are able to demonstrate an understanding of a range of topics in agricultural systems technology, including safety principles and practices, shop fabrication, construction, maintenance and operation of power equipment, and land measurement and irrigation systems. (CSET Subtest 3)

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## Art

- **Domain 1. Artistic Perception:** Candidates demonstrate an understanding of the foundations of artistic perception contained in the Visual and Performing Arts Content Standards for California Public Schools Prekindergarten Through Grade Twelve: Visual Arts (2001) at an advanced level of proficiency. Candidates have both broad and deep conceptual knowledge of the subject matter and are able to accurately define and use the vocabulary of the visual arts. They possess highly developed perceptual and analytical skills that allow a sophisticated response to the world around them and to the formal and expressive qualities of works of visual art and of design across a multiplicity of forms, media, genres, purposes, and functions. (CSET Subtest 1)
- **Domain 2. Creative Expression:** Candidates demonstrate an understanding of the foundations of creative expression contained in the Visual and Performing Arts Content Standards for California Public Schools Prekindergarten Through Grade Twelve: Visual Arts (2001) at an advanced level of proficiency. Candidates have both broad and deep conceptual knowledge of the process of creating original works of art. They are involved in the translation of thoughts, perceptions, and ideas into visual form using a variety of media, techniques, and problem-solving abilities. Candidates have a comprehensive knowledge of and technical proficiency in the use of tools, techniques, and media taught in the preK–12 and adult school art curriculum. (CSET Subtest 2)
- **Domain 3. Historical and Cultural Context of the Visual Arts:** Candidates demonstrate an understanding of the historical and cultural foundations of art contained in the Visual and Performing Arts Content Standards for California Public Schools Prekindergarten Through Grade Twelve: Visual Arts (2001) at an advanced level of proficiency. Candidates have both broad and deep conceptual knowledge of the subject matter including cultural frames of reference and worldviews. They demonstrate wide knowledge of world arts, of the history and diversity of art, and of the roles and forms of the visual arts in societies past and present. (CSET Subtest 1)
- **Domain 4. Aesthetic Valuing:** Candidates demonstrate an understanding of aesthetic valuing in art as contained in the Visual and Performing Arts Content Standards for California Public Schools Prekindergarten Through Grade Twelve: Visual Arts (2001) at an advanced level of proficiency. Candidates have both broad and deep conceptual knowledge of the subject matter. They are able to respond to, analyze, interpret, and critique processes and works of visual art representing a wide diversity of forms, media, purposes, and functions. Candidates are able to make sound critical judgments about the quality and success of artworks, relying on their own experiences in and perceptions about the visual arts as well as the perceptions of others. (CSET Subtest 1)
- **Domain 5. Connections, Relationships, and Applications:** Candidates demonstrate an understanding of art connections, relationships, and applications contained in the Visual and Performing Arts Content Standards for California Public Schools Prekindergarten Through Grade Twelve: Visual Arts (2001) at an advanced level of proficiency. Candidates have both broad and deep conceptual knowledge of the subject matter. They understand connections and relationships between visual art and the other arts, as well as those between visual art, other disciplines, and the world at large. Candidates possess a high degree of visual literacy. They are familiar with the broad range of career

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opportunities available in the field of visual art, as well as with the roles and functions of visual art in a variety of professions and industries. (CSET Subtest 2)

- **Domain 6. History and Theories of Learning in Art:** Candidates demonstrate a comprehensive understanding of the history and theories of art education and the role of arts in human development related to the content contained in Visual and Performing Arts Content Standards for California Public Schools Prekindergarten Through Grade Twelve: Visual Arts (2001). Candidates have both broad and deep conceptual knowledge of the subject matter. They have in-depth knowledge of proficiency levels and developmental stages in art. (CSET Subtest 2)

## Business

- **Domain 1. Business Management:** Candidates demonstrate an understanding of the purpose and function of business management. Candidates understand the functions of management, organizational theory, and organizational behavior, including leadership and motivational theories. Candidates explain the importance and implications of ethical and legal behavior. They apply effective processes and procedures for making sound business decisions. They understand the basic principles and procedures required to manage service, trade, manufacturing, nonprofit, and public organizations. Candidates understand the role of managing human resources in successful business organizations. (CSET Subtest 1)
- **Domain 2. Accounting and Finance:** Candidates demonstrate an understanding of financial analysis and accounting concepts, principles, and procedures. Candidates analyze, apply, interpret, and communicate financial data. They understand how to make decisions using accounting data. Candidates use principles of finance to analyze business situations and apply basic principles of personal financial management. (CSET Subtest 2)
- **Domain 3. Marketing:** Candidates demonstrate an understanding of marketing principles and how to use marketing strategies to improve product and service sales. Candidates recognize the customer-oriented nature of marketing and analyze the impact of marketing activities on the individual, business, society, and the global economy. They understand the role of distribution in providing products and services to consumers. Candidates understand how customer service and promotion affect sales. Candidates understand how emerging technologies influence e-commerce and global trade. (CSET Subtest 1)
- **Domain 4. Information Technology:** Candidates demonstrate an understanding of the terminology, principles, and procedures related to information technology. Candidates understand principles and procedures related to ethics, security, and data integrity in technology systems. They understand communications and networking systems and apply basic concepts of programming and systems development in business situations. (CSET Subtest 3)
- **Domain 5. Economics:** Candidates demonstrate an understanding of basic economic principles. Candidates understand the basic principles and applications of

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microeconomics and macroeconomics and recognize how economic concepts affect business in domestic and international economies. (CSET Subtest 2)

- **Domain 6. Business Environment and Communication:** Candidates demonstrate an understanding of the business environment. Candidates understand the principles and procedures of business ownership. They understand the role of communications in a business environment. Candidates are familiar with different career paths and opportunities to develop career and employment skills. Candidates have an understanding of international business. (CSET Subtest 6)

## Dance

- **Domain 1. Creating:** Candidates have both broad and in-depth knowledge of movement, including the relationship between sensory stimuli and movement. They possess a highly developed understanding of basic movements and understand how the elements of dance are used to solve movement problems and achieve artistic expression. They understand risk taking and experimentation and how movement vocabularies are used to express artistic intent. They understand the concepts of choreography, including the use of artistic criteria to choreograph and evaluate a dance. They understand artistic statements, the importance of using feedback and revision to refine dances, and how to document dance works.
- **Domain 2. Performing:** Candidates have both broad and in-depth conceptual knowledge of how to perform. They understand movement in space—the space of the stage and the space in and around themselves and other performers. They understand tempo and energy in dance performance and they have the vocabulary to describe them. They understand how the human body is used and moves in dance. They understand anatomy and healthful practices as they relate to dance. They understand performance etiquette and production elements.
- **Domain 3. Responding:** Candidates have both broad and in-depth conceptual knowledge of describing, analyzing, interpreting, and evaluating dance. They are able to identify recurring patterns of movement and their relationships. They understand how the elements of dance contribute to artistic expression and are able to make sound critical judgments about the quality and success of dance works.
- **Domain 4. Connecting:** Candidates have both broad and in-depth conceptual knowledge of the historical and cultural contexts of dance. They understand that dance has been a means of emotional and intellectual expression throughout human history and have basic familiarity with the roles and forms of dance in societies past and present. They recognize how research is used in dance to understand the movement practices in a variety of cultures throughout the world and the ways in which dance communicates and conveys the ideas and perspectives of the cultures from which dances come. They understand how dancers connect with choreography and the relationship between choreography and personal perspectives, and they are familiar with a variety of dance careers.

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## English

- **Domain 1: Reading Literature and Informational Texts:** Candidates demonstrate knowledge of the foundations and contexts of reading literature and informational texts contained in California's Common Core State Standards in English Language Arts, Literacy in History/Social Studies, Science, and Technical Subjects (2013), at a postsecondary level of rigor. Candidates have both broad and deep conceptual knowledge of the subject matter. The candidate's preparation should include breadth of knowledge in literature, literary analysis and criticism, as well as informational text analysis. Literary analysis presumes in-depth exploration of the relationship between form and content. The curriculum should embrace representative selections from multiple literary traditions and major works from diverse cultures. Advanced study of authors representing a broad range of literary periods and cultures is fundamental preparation for teaching these works. Shakespeare remains integral to the secondary school curriculum; advanced study of his work is, therefore, essential to future secondary teachers. Candidates must know and apply effective reading strategies and compose thoughtful, well-crafted responses to literary and informational texts. Candidates will be able to (CSET Subtest 1, 3)
- **Domain 2. Language, Linguistics, and Literacy:** Candidates demonstrate knowledge of the foundations and contexts of the language, linguistics, and literacy contained in California's Common Core State Standards in English Language Arts, Literacy in History/Social Studies, Science, and Technical Subjects (2013) at a postsecondary level of rigor. Candidates have both broad and deep conceptual knowledge of the subject matter. The diversity of the California student population requires the candidate to understand the principles of language acquisition and development. Candidates must become knowledgeable about the nature of human language, language variation, and historical and cultural perspectives on the development of English. In addition, candidates must acquire a complex understanding of the development of English literacy among both native and non-native speakers. Candidates will be able to: (CSET Subtest 2)
- **Domain 3: Composition and Rhetoric:** Candidates demonstrate knowledge of the foundations and contexts of the composition and rhetoric contained in California's Common Core State Standards in English Language Arts, Literacy in History/Social Studies, Science, and Technical Subjects (2013) at a postsecondary level of rigor. Candidates have both broad and deep conceptual knowledge of the subject matter. Candidates face dynamic challenges in the domains of oral and written communication. They must make appropriate use of current text-production technologies and develop awareness of patterns of communication used by diverse social and cultural groups. Candidates are competent writers and speakers who are able to communicate appropriately in various rhetorical contexts, using effective text structures, word choice, sentence options, standard usage conventions, and advanced research methods as needed. Candidates develop skills and confidence in public speaking. Candidates will be able to: (CSET Subtest 1, 3)
- **Domain 4. Communications: Speech, Media, and Creative Performance:** Candidates demonstrate knowledge of the foundations and contexts of the speech, media, and

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creative performance contained in California's Common Core State Standards in English Language Arts, Literacy in History/Social Studies, Science, and Technical Subjects (2010) , at a postsecondary level of rigor. Candidates have both broad and deep conceptual knowledge of the subject matter including analysis and evaluation of oral and media communication as well as on effective public speaking and performance. The candidate must possess the breadth of knowledge needed to integrate journalism, technological media, speech, and dramatic performance into the language arts curriculum, including awareness of cultural approaches to communication. The candidate skillfully applies the artistic and aesthetic tools required for creative expression. Candidates will be able to: (CSET Subtest 4)

## Foundational Level Mathematics Subject Matter Requirements

- **Domain 1: Number and Quantity:** Candidates demonstrate an understanding of number theory and a command of number sense as outlined in California's Common Core Content Standards for Mathematics (Grade 6, Grade 7, Grade 8, and High School). Candidates demonstrate a depth and breadth of conceptual knowledge to ensure a rigorous view of number systems and their underlying structures. They prove and use properties of natural numbers. They formulate conjectures about the natural numbers using inductive reasoning and verify conjectures with proofs. (CSET Subtest 1)
- **Domain 2: Algebra:** Candidates demonstrate an understanding of the foundations of algebra as outlined in California Common Core Content Standards for Mathematics (Grade 7, Grade 8, and High School). Candidates demonstrate a depth and breadth of conceptual knowledge to ensure a rigorous view of algebra and its underlying structures. They are skilled at symbolic reasoning and use algebraic skills and concepts to model a variety of problem-solving situations. They understand the power of mathematical abstraction and symbolism. (CSET Subtest 1)
- **Domain 3: Geometry:** Candidates demonstrate an understanding of the foundations of geometry outlined in California Common Core Content Standards for Mathematics (Grade 7, Grade 8, and High School). Candidates demonstrate a depth and breadth of conceptual knowledge to ensure a rigorous view of geometry and its underlying structures. They demonstrate an understanding of axiomatic systems and different forms of logical arguments. Candidates understand, apply, and prove theorems relating to a variety of topics in two- and three-dimensional geometry, including coordinate, synthetic, non-Euclidean, and transformational geometry. (CSET Subtest 2)
- **Domain 4: Probability and Statistics:** Candidates demonstrate an understanding of statistics and probability distributions as outlined in the California Common Core Content Standards for Mathematics (Grade 7, Grade 8, and High School). Candidates demonstrate a depth and breadth of conceptual knowledge to ensure a rigorous view of probability and statistics and their underlying structures. They solve problems and make inferences using statistics and probability distributions. (CSET Subtest 2)

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## Health Science Subject Matter Requirements

- **Domain 1. Foundations of Health Education:** Candidates demonstrate an understanding of the professional, scientific, and behavioral foundations in alignment with the Health Framework for California Public Schools (2003). Candidates must demonstrate a fundamental understanding of the professional and legal responsibilities of health educators, of the scientific and behavioral principles that are the basis of health science, and of the philosophies of health education. (CSET Subtest 1)
- **Domain 2. Human Growth and Development:** Candidates demonstrate an understanding of physical and psychosocial growth and development in alignment with the Health Framework for California Public Schools (2003). Candidates must demonstrate a fundamental understanding of human growth patterns, characteristics of developmental stages over the life cycle, and factors that affect psychosocial growth and development. (CSET Subtest 1)
- **Domain 3. Chronic and Communicable Diseases:** Candidates demonstrate an understanding of chronic and communicable diseases in alignment with the Health Framework for California Public Schools (2003). Candidates must demonstrate a fundamental understanding of the risk factors for, characteristics of, and prevention of chronic and communicable diseases. (CSET Subtest 1)
- **Domain 4. Nutrition and Fitness:** Candidates demonstrate an understanding of nutrition and physical fitness in alignment with the Health Framework for California Public Schools (2003). Candidates must demonstrate a fundamental understanding of relationships among nutrition, physical activity, and lifelong well-being. (CSET Subtest 2)
- **Domain 5. Mental and Emotional Health:** Candidates demonstrate an understanding of the foundations of mental and emotional well-being in alignment with the Health Framework for California Public Schools (2003). Candidates must demonstrate a fundamental understanding of the role of mental and emotional health in maintaining lifelong well-being and of how to adapt positively to change. (CSET Subtest 2)
- **Domain 6. Alcohol, Tobacco, and Other Drugs:** Candidates demonstrate an understanding of drugs and of factors affecting their use, misuse, and abuse in alignment with the Health Framework for California Public Schools (2003). Candidates must demonstrate a fundamental understanding of drug classifications; the physical effects of drug use, misuse, and abuse; and the prevention, intervention, and treatment of drug abuse and addiction. (CSET Subtest 2)
- **Domain 7. Family Life and Interpersonal Relationships:** Candidates demonstrate an understanding of family and interpersonal relationships and of reproductive health in alignment with the Health Framework for California Public Schools (2003). Candidates must demonstrate a fundamental understanding of family structures, family life education, interpersonal relationships, and human sexuality and reproductive health. (CSET Subtest 3)
- **Domain 8. Consumer and Community Health:** Candidates demonstrate an understanding of consumer and community health, intentional and unintentional injury, and emergency preparedness in alignment with the Health Framework for California Public Schools (2003). Candidates must demonstrate a fundamental understanding of

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the impact of culture, media, technology, and other factors on consumer health. They understand ways to promote and maintain positive and safe health practices and reduce the risk of injury and violence within the home, school, and community. (CSET Subtest 3)

- **Domain 9. Environmental Health:** Candidates demonstrate an understanding of the relationships between humans and their environment in alignment with the Health Framework for California Public Schools (2003). Candidates must demonstrate a fundamental understanding of factors in natural and human environments that impact health and of ways to conserve natural resources and protect the environment. (CSET Subtest 3)

## Home Economics

- **Domain 1. Personal, Family, and Child Development:** Candidates demonstrate an understanding of personal, interpersonal, and family relationships; parenting; and child development and education. Candidates must have a broad and deep understanding of the types of relationships people have, as well as the factors that can affect relationships. They recognize major theories about human and family development and understand methods, strategies, and approaches that can be used to foster physical, cognitive, emotional, and social development. They are also familiar with knowledge and skills transferable to a variety of careers related to family services, child development, and education. (CSET Subtest 1)
- **Domain 2. Nutrition, Foods, and Hospitality:** Candidates demonstrate an understanding of food science, nutritional science, food preparation, and hospitality. Candidates understand the scope of food and nutritional science, including physiological and biochemical processes involved in the preparation and consumption of food and nutrients. They understand the components of and the various factors that affect health and well-being and have knowledge about various illnesses and diseases related to food and nutrition. They are knowledgeable about current research and new technologies in nutrition and food industries. They also understand procedures and techniques related to food preparation and meal management. Candidates have knowledge of various kitchen designs, equipment, appliances, safety and sanitation standards, and emergency procedures. They are also familiar with knowledge and skills transferable to a variety of careers related to food, nutrition, and hospitality industries. (CSET Subtest 2)
- **Domain 3. Fashion and Textiles:** Candidates demonstrate an understanding of fashion, textiles, and apparel design and construction. Candidates must have a substantial understanding of the history of fashion and current trends in fashion; wardrobe management; fibers, fabrics, and finishes; and apparel equipment and materials, as well as maintenance and construction procedures used in various activities related to apparel and textile items. They are familiar with knowledge and skills transferable to a variety of careers related to the fashion and textile industries. (CSET Subtest 3)
- **Domain 4. Housing and Interior Design:** Candidates demonstrate an understanding of interior design and housing. Candidates must understand the elements and principles of design; historical and contemporary interiors, architectural styles, and furniture designs; and the materials, methods, tools, and technology used in design of living and working environments. They also understand consumer aspects of interiors and housing, such as

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the role of the government and other organizations in housing and related matters; the criteria considered in selecting housing; and the laws, regulations, and responsibilities associated with housing. They are familiar with knowledge and skills transferable to a variety of careers related to the interior design and housing industries. (CSET Subtest 3)

- **Domain 5. Consumer Education:** Candidates demonstrate an understanding of personal and family resources, consumer rights and responsibilities, economic systems, and personal finances. Candidates must have a substantial understanding of consumer economics, decisions, purchases, and the resources and factors that inform, influence, and shape personal and family resource management. They understand how the U.S. economy functions and the factors that affect it, as well as its effects on U.S. consumers. They have an understanding of the global market and the global economy and how they affect the U.S. economic system. They are also familiar with knowledge and skills transferable to a variety of careers related to the consumer service industry. (CSET Subtest 3)

## Industrial and Technology Education

- **Domain 1. Nature of Technology:** Candidates understand technology as a problem-solving process and know the history and evolution of technology. They understand that technology involves creativity and innovation and are able to use concepts from the core content areas of science, mathematics, social science, and language arts as well as other content areas commonly taught in California public schools to design solutions to problems. Candidates understand the social aspect of technology and analyze the positive and negative effects of technologies on society and the environment. They understand the skills, knowledge, attitudes, and commitment to lifelong learning necessary to develop technological literacy and apply this knowledge in a rapidly changing global environment. (CSET Subtest 1)
- **Domain 2. Power and Energy:** Candidates demonstrate an understanding of the fundamental scientific concepts of power and energy and how these concepts apply to mechanical, fluid, thermal, and electrical systems. Candidates understand the generation, transmission, storage, and control of power and energy and apply this knowledge to design, maintain, and analyze a variety of power and energy technologies, including transportation technologies. (CSET Subtest 2)
- **Domain 3. Information and Communication:** Candidates demonstrate an understanding of the knowledge and skills needed to design, analyze, use, and maintain a variety of communication systems. They demonstrate an understanding of how information systems encode, transmit, receive, decode, and store data. Candidates understand principles of graphic communication and use appropriate graphic tools to communicate visually. They apply knowledge of circuits and their components to electronic communication systems. (CSET Subtest 2)
- **Domain 4. Project and Product Development:** Candidates demonstrate an understanding of product development and how to plan, manage, and produce manufacturing and construction systems. Candidates understand the resources and processes needed to safely use a variety of processes to design, produce, maintain, and evaluate products. Candidates demonstrate an understanding of the requirements and

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constraints in the engineering design process and the systems approach to manufacturing and construction enterprises. Candidates understand issues associated with quality management and quality control, including statistical tools. (CSET Subtest 2)

## Mathematics

- **Domain 1: Number and Quantity:** Candidates demonstrate an understanding of number theory and a command of number sense as outlined in California Common Core Content Standards for Mathematics (Grade 6, Grade 7, Grade 8, and High School). Candidates demonstrate a depth and breadth of conceptual knowledge to ensure a rigorous view of number systems and its underlying structures. They prove and use properties of natural numbers. They formulate conjectures about the natural numbers using inductive reasoning and verify conjectures with proofs. (CSET Subtest 1)
- **Domain 2: Algebra:** Candidates demonstrate an understanding of the foundations of algebra as outlined in the California Common Core Content Standards for Mathematics (Grade 7, Grade 8, and High School). Candidates demonstrate a depth and breadth of conceptual knowledge to ensure a rigorous view of algebra and its underlying structures. They are skilled at symbolic reasoning and use algebraic skills and concepts to model a variety of problem-solving situations. They understand the power of mathematical abstraction and symbolism. (CSET Subtest 1)
- **Domain 3: Geometry:** Candidates demonstrate an understanding of the foundations of geometry as outlined in the California Common Core Content Standards for Mathematics (Grade 7, Grade 8, and High School). Candidates demonstrate a depth and breadth of conceptual knowledge to ensure a rigorous view of geometry and its underlying structures. They demonstrate an understanding of axiomatic systems and different forms of logical arguments. Candidates understand, apply, and prove theorems relating to a variety of topics in two- and three-dimensional geometry, including coordinate, synthetic, non-Euclidean, and transformational geometry. (CSET Subtest 2)
- **Domain 4: Probability and Statistics:** Candidates demonstrate an understanding of statistics and probability distributions as outlined in the California Common Core Content Standards for Mathematics (Grade 7, Grade 8, and High School). Candidates demonstrate a depth and breadth of conceptual knowledge to ensure a rigorous view of probability and statistics and their underlying structures. They solve problems and make inferences using statistics and probability distributions. (CSET Subtest 2)
- **Domain 5: Calculus:** Candidates demonstrate an understanding of trigonometry and calculus as outlined in the California Common Core Content Standards for Mathematics (High School). Candidates demonstrate a depth and breadth of conceptual knowledge to ensure a rigorous view of trigonometry and calculus and their underlying structures. They apply the concepts of trigonometry and calculus to solving problems in real-world situations. (CSET Subtest 3)

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## Music

- **Domain 1. Artistic Perception:** Candidates demonstrate an advanced understanding of the facets of artistic perception contained in the Visual and Performing Arts Content Standards for California Public Schools Prekindergarten Through Grade Twelve: Music (2001). Candidates have both broad and deep conceptual knowledge of the subject matter. They possess highly developed aural musicianship and aural analysis skills and have acquired advanced knowledge of written music theory and analysis. (CSET Subtest 1)
- **Domain 2. Creative Expression:** Candidates demonstrate an advanced understanding of the facets of creative expression contained in the Visual and Performing Arts Content Standards for California Public Schools Prekindergarten Through Grade Twelve: Music (2001). Candidates have both broad and deep conceptual knowledge of the subject matter. They perform expressively and skillfully on a primary instrument or with voice. To meet the needs of the general music classroom and ensemble rehearsals, they also play the keyboard proficiently. Candidates have a thorough knowledge of conducting techniques, and they demonstrate that they can conduct choral and instrumental ensembles expressively and skillfully. They are also skilled at sight-singing, sight-reading, composing, arranging, and improvising music for classroom and performance situations. (CSET Subtest 2)
- **Domain 3. Historical and Cultural Foundations:** Candidates demonstrate an advanced understanding of the historical and cultural foundations of music contained in the Visual and Performing Arts Content Standards for California Public Schools Prekindergarten Through Grade Twelve: Music (2001). Candidates have both broad and deep conceptual knowledge of the subject matter. They demonstrate wide knowledge of music from around the world, the history of Western music, and the history of music in the United States and California. They use this knowledge when analyzing musical works for various purposes. (CSET Subtest 1)
- **Domain 4. Aesthetic Valuing:** Candidates demonstrate an advanced understanding of aesthetic valuing in music as contained in the Visual and Performing Arts Content Standards for California Public Schools Prekindergarten Through Grade Twelve: Music (2001). Candidates have both broad and deep conceptual knowledge of the subject matter. They are able to respond to, analyze, and critique performances and works of music, including their own. (CSET Subtest 1)
- **Domain 5. Connections, Relationships, and Applications:** Candidates demonstrate an advanced understanding of music connections, relationships, and applications contained in the Visual and Performing Arts Content Standards for California Public Schools Prekindergarten Through Grade Twelve: Music (2001). Candidates have both broad and deep conceptual knowledge of the subject matter. They understand the connections and relationships between music and the other arts as well as between music and other academic disciplines. Candidates are also familiar with the broad range of career and lifelong learning opportunities available in the field of music as well as the ways in which music functions in the media and entertainment industries. (CSET Subtest 2)

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- **Domain 6. Music Methodology and Repertoire:** Candidates demonstrate an advanced understanding of music methodology and repertoire for listening and performance that reflects the content in the Visual and Performing Arts Content Standards for California Public Schools Prekindergarten Through Grade Twelve: Music (2001). Candidates have both broad and deep conceptual knowledge of the subject matter. They have in-depth knowledge of methodology of general music as well as instrumental and choral performance ensembles. Candidates are familiar with a broad range of repertoire, and they apply criteria to evaluate pieces of music for specific purposes. Candidates are familiar with the broad range of technology used in creating, listening to, and studying music. They are also knowledgeable about strategies for sequencing music activities and about specialized music evaluation tools. (CSET Subtest 3)

## Physical Education

- **Domain 1. Professional Foundations:** Candidates demonstrate an understanding of the philosophical, historical, and legal/ethical foundations of physical education. To plan and implement programs that are aligned with the approved Physical Education Framework or other approved state documents and the Challenge Standards for Student Success: Physical Education (1998), candidates must have a broad and deep understanding of issues that affect the field, of the professional responsibilities of physical educators, and of the past and present philosophies of physical education and their impact on contemporary programs. (CSET Subtest 3)
- **Domain 2. Growth, Motor Development, and Motor Learning:** Candidates must demonstrate an understanding of human growth and development processes, as well as how these processes interact with and influence motor learning, in order to teach the movement knowledge and skills contained in the Challenge Standards for Student Success: Physical Education (1998). Foundational knowledge of physical growth, motor development, and motor learning helps ensure that candidates are prepared to provide students, including students with disabilities, with an appropriate, safe, and effective physical education program. (CSET Subtest 1)
- **Domain 3. The Science of Human Movement:** Candidates demonstrate an understanding of the scientific bases of human movement. To guide students in meeting the goals identified in the Challenge Standards for Student Success: Physical Education (1998), candidates must be able to analyze motion according to scientific principles and apply that knowledge with consideration for individual differences, including disabilities. A broad and deep understanding of the sciences involved in human movement, including anatomy, physiology, kinesiology/biomechanics, exercise physiology, and health-related fitness, enables candidates to understand and explain motion; recognize changes in body systems resulting from practice, development, and response to exercise; and provide instruction in safe and efficient body mechanics. (CSET Subtest 1)
- **Domain 4. The Sociology and Psychology of Human Movement:** Candidates demonstrate an understanding of the sociology and psychology of human movement. Physical activity provides a context for a broad range of experiences that can be used to promote the personal and social developmental concepts and skills contained in the Challenge Standards for Student Success: Physical Education (1998). A broad and deep

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understanding of the sociological and psychological aspects of movement activities helps ensure that candidates are prepared to promote students' motivation for physical activity, regardless of students' abilities, and their development of positive, responsible personal and social behaviors that encourage lifelong physical activity. (CSET Subtest 2)

- **Domain 5. Movement Concepts and Forms:** Candidates demonstrate an understanding of the movement concepts and forms contained in the Challenge Standards for Student Success: Physical Education (1998). These include but are not limited to aquatics; dance; fitness activities; fundamental and creative movement skills; individual, dual, and team sports; nontraditional activities and games; outdoor education activities; and gymnastics. To develop a balanced program that will address a variety of ability levels and create challenging, appropriate tasks in a variety of movement forms, candidates must have a broad and deep understanding of movement and fitness activities as well as an ability to integrate and apply movement concepts to a broad range of physical education activities and environments. (CSET Subtest 2)
- **Domain 6. Assessment and Evaluation Principles:** Candidates must demonstrate an understanding of assessment principles and procedures in order to be able to evaluate the effectiveness of physical education strategies and activities in promoting student achievement of the goals presented in the Challenge Standards for Student Success: Physical Education (1998). A rigorous knowledge of assessment helps ensure that candidates can determine whether individuals, including those with diverse backgrounds, varying abilities, and special needs, have progressed and achieved specified goals in physical education. Candidates must be able to select, adapt, and develop appropriate assessment instruments and strategies based on sound research principles related to physical, motor, and fitness attributes and needs of individuals and classes. (CSET Subtest 2)
- **Domain 7. Integration of Concepts:** Candidates must demonstrate an understanding of the integration of themes and concepts in physical education and the interrelationships between physical education and other subject areas in order to create effective learning environments and experiences that provide students with opportunities to achieve the goals contained in the Challenge Standards for Student Success: Physical Education (1998). (CSET Subtest 3)

## Science: Biology

- **General Science Domain 1: Scientific Practices, Engineering Design and Applications, and Crosscutting Concepts (Subtest I)**
  - Understand scientific practices
  - Understand engineering practices, design, and applications
  - Understand crosscutting concepts among the sciences and engineering
- **General Science Domain 2: Physical Sciences (Subtest I)**
  - Understand structure and properties of matter
  - Understand chemical reactions and biochemistry
  - Understand motion and stability: forces and interactions
  - Understand waves and their applications in technologies for information transfer
  - Understand energy

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- Understand electricity and magnetism
- **General Science Domain 3: Life Sciences (Subtest I)**
  - Understand the structure and function of cells
  - Understand growth, development, and energy flow in organisms
  - Understand ecosystems: interactions, energy, and dynamics
  - Understand heredity: inheritance and variation of traits
  - Understand biological evolution: unity and diversity
- **General Science Domain 4: Earth and Space Sciences (Subtest I)**
  - Understand Earth's place in the universe
  - Understand Earth's materials and systems and surface processes
  - Understand plate tectonics and large scale system interactions
  - Understand weather and climate
  - Understand natural resources and natural hazards
- **Domain 1: From Molecules to Organisms: Structures and Processes (Subtest II)**
  - Understand the structure and function of cells
  - Understand the hierarchical organization and functioning of systems in multicellular organisms
  - Understand growth and development of organisms
  - Understand matter and energy flow in organisms
- **Domain 2: Ecosystems: Interactions, Energy, and Dynamics (Subtest II)**
  - Understand interdependent relationships in ecosystems
  - Understand cycles of matter and energy transfer in ecosystems
  - Understand ecosystem dynamics, functioning, and resilience
- **Domain 3: Heredity: Inheritance and Variation of Traits (Subtest II)**
  - Understand inheritance of traits
  - Understand variation of traits and genetic engineering
- **Domain 4: Biological Evolution: Unity and Diversity (Subtest II)**
  - Understand evidence of common ancestry and diversity
  - Understand natural selection
  - Understand adaptation.

## Science: Chemistry

- **General Science Domain 1: Scientific Practices, Engineering Design and Applications, and Crosscutting Concepts (Subtest I)**
  - Understand scientific practices
  - Understand engineering practices, design, and applications
  - Understand crosscutting concepts among the sciences and engineering
- **General Science Domain 2: Physical Sciences (Subtest I)**
  - Understand structure and properties of matter
  - Understand chemical reactions and biochemistry
  - Understand motion and stability: forces and interactions
  - Understand waves and their applications in technologies for information transfer
  - Understand energy

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- Understand electricity and magnetism
- **General Science Domain 3: Life Sciences (Subtest I)**
  - Understand the structure and function of cells
  - Understand growth, development, and energy flow in organisms
  - Understand ecosystems: interactions, energy, and dynamics
  - Understand heredity: inheritance and variation of traits
  - Understand biological evolution: unity and diversity
- **General Science Domain 4: Earth and Space Sciences (Subtest I)**
  - Understand Earth's place in the universe
  - Understand Earth's materials and systems and surface processes
  - Understand plate tectonics and large scale system interactions
  - Understand weather and climate
  - Understand natural resources and natural hazards
- **Domain 1: Structure and Properties of Matter (Subtest II)**
  - Understand the structure of matter
  - Understand the properties of matter
  - Understand the behavior and properties of solutions
  - Understand nuclear processes
- **Domain 2: Chemical Reactions and Chemical Bonding (Subtest II)**
  - Understand chemical reactions
  - Understand chemical bonding
  - Understand conservation of matter and stoichiometry
  - Understand organic chemistry and biochemistry
- **Domain 3: Energy (Subtest II)**
  - Understand the definitions of energy, conservation of energy, and energy transfer
  - Understand energy in chemical processes and everyday life

## Science: Earth and Space Science

- **General Science Domain 1: Scientific Practices, Engineering Design and Applications, and Crosscutting Concepts (Subtest I)**
  - Understand scientific practices
  - Understand engineering practices, design, and applications
  - Understand crosscutting concepts among the sciences and engineering
- **General Science Domain 2: Physical Sciences (Subtest I)**
  - Understand structure and properties of matter
  - Understand chemical reactions and biochemistry
  - Understand motion and stability: forces and interactions
  - Understand waves and their applications in technologies for information transfer
  - Understand energy
  - Understand electricity and magnetism
- **General Science Domain 3: Life Sciences (Subtest I)**
  - Understand the structure and function of cells

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- Understand growth, development, and energy flow in organisms
- Understand ecosystems: interactions, energy, and dynamics
- Understand heredity: inheritance and variation of traits
- Understand biological evolution: unity and diversity
- **General Science Domain 4: Earth and Space Sciences (Subtest I)**
  - Understand Earth's place in the universe
  - Understand Earth's materials and systems and surface processes
  - Understand plate tectonics and large scale system interactions
  - Understand weather and climate
  - Understand natural resources and natural hazards
- **Domain 1: Earth's Place in the Universe (Subtest II)**
  - Understand the universe and its stars
  - Understand Earth and the solar system
  - Understand the history of planet Earth
- **Domain 2: Earth's Systems (Subtest II)**
  - Understand Earth's materials and systems
  - Understand plate tectonics and large-scale systems
  - Understand oceanography and the role of water in Earth's surface processes
  - Understand the atmosphere, weather, and climate
- **Domain 3: Earth and Human Activity (Subtest II)**
  - Understand natural resources
  - Understand natural hazards
  - Understand human impacts on Earth's systems
  - Understand global climate change

## Science: Foundational Level Science

- **General Science Domain 1: Scientific Practices, Engineering Design and Applications, and Crosscutting Concepts (Subtest I)**
  - Understand scientific practices
  - Understand engineering practices, design, and applications
  - Understand crosscutting concepts among the sciences and engineering
- **General Science Domain 2: Physical Sciences (Subtest I)**
  - Understand structure and properties of matter
  - Understand chemical reactions and biochemistry
  - Understand motion and stability: forces and interactions
  - Understand waves and their applications in technologies for information transfer
  - Understand energy
  - Understand electricity and magnetism
- **General Science Domain 3: Life Sciences (Subtest I)**
  - Understand the structure and function of cells
  - Understand growth, development, and energy flow in organisms
  - Understand ecosystems: interactions, energy, and dynamics
  - Understand heredity: inheritance and variation of traits

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- Understand biological evolution: unity and diversity
- **General Science Domain 4: Earth and Space Sciences (Subtest I)**
  - Understand Earth's place in the universe
  - Understand Earth's materials and systems and surface processes
  - Understand plate tectonics and large scale system interactions
  - Understand weather and climate
  - Understand natural resources and natural hazards

## Science: Physics

- **General Science Domain 1: Scientific Practices, Engineering Design and Applications, and Crosscutting Concepts (Subtest I)**
  - Understand scientific practices
  - Understand engineering practices, design, and applications
  - Understand crosscutting concepts among the sciences and engineering
- **General Science Domain 2: Physical Sciences (Subtest I)**
  - Understand structure and properties of matter
  - Understand chemical reactions and biochemistry
  - Understand motion and stability: forces and interactions
  - Understand waves and their applications in technologies for information transfer
  - Understand energy
  - Understand electricity and magnetism
- **General Science Domain 3: Life Sciences (Subtest I)**
  - Understand the structure and function of cells
  - Understand growth, development, and energy flow in organisms
  - Understand ecosystems: interactions, energy, and dynamics
  - Understand heredity: inheritance and variation of traits
  - Understand biological evolution: unity and diversity
- **General Science Domain 4: Earth and Space Sciences (Subtest I)**
  - Understand Earth's place in the universe
  - Understand Earth's materials and systems and surface processes
  - Understand plate tectonics and large scale system interactions
  - Understand weather and climate
  - Understand natural resources and natural hazards
- **Physics Domain 1: Motion and Stability: Forces and Interactions (Subtest II)**
  - Understand forces and motion
  - Understand conservation of energy and momentum
- **Physics Domain 2: Energy (Subtest II)**
  - Understand definitions of energy and energy in everyday life
  - Understand thermal energy and kinetic molecular theory
  - Understand electricity and magnetism
- **Physics Domain 3: Waves and their Application (Subtest II)**
  - Understand wave properties

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- Understand electromagnetic radiation and applications of waves in information technologies and instrumentation
- **Physics Domain 4: Modern Physics (Subtest II)**
  - Understand quantum mechanics, the standard model of particles, and special relativity
  - Understand nuclear processes

## Social Science

- **Domain 1. World History:** Candidates demonstrate knowledge of the foundations and contexts of the world history contained in the History-Social Science Content Standards for California Public Schools (1998) as outlined in the History-Social Science Framework for California Public Schools (2001) at a post secondary level of rigor. Candidates have both broad and deep conceptual understanding of the subject matter. Candidates study the people, major events, and issues of the major Western and non-Western civilizations from the origins of humankind to the present. In their study of world history, candidates apply higher-level thinking skills. These skills include, but are not limited to, the ability to analyze, interpret, compare and contrast, and synthesize information about significant historical issues in both written and oral presentation. Candidates utilize appropriate research skills and primary and secondary sources. They engage in historiographic thinking, and demonstrate awareness of multiple historical and geographic perspectives. Candidates appreciate the fundamental role geography plays in historical inquiry. They also understand and are able to apply the principles of political science and economics to historical analysis. (CSET Subtest 1)
- **Domain 2. U.S. History:** Candidates demonstrate knowledge of the foundations and contexts of the United States history contained in the History-Social Science Content Standards for California Public Schools (1998) as outlined in the History-Social Science Framework for California Public Schools (2001) at a post secondary level of rigor. Candidates have both broad and deep conceptual understanding of the subject matter. Candidates study the people and major events and issues of U. S. history from the colonization of North America to the present. In their study of U.S. history, they apply higher level thinking skills. These skills include, but are not limited to, the ability to analyze, interpret, compare and contrast, and synthesize information about significant historical issues in both written and oral presentation. Candidates utilize appropriate research skills and primary and secondary sources. They engage in historiographic thinking, and are aware of multiple historical and geographic perspectives. Candidates appreciate the fundamental role geography plays in historical inquiry, and they understand and apply the principles of political science and economics to historical analysis of U.S. history. (CSET Subtest 2)
- **Domain 3. California History:** Candidates demonstrate knowledge of the foundations and contexts of the California history contained in the History-Social Science Content Standards for California Public Schools (1998) as outlined in the History-Social Science Framework for California Public Schools (2001) at a post secondary level of rigor. Candidates have both broad and deep conceptual understanding of the subject matter. Candidates study the history of California from the pre-Columbian period to the present.

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In this study of California history, they apply higher level thinking skills. These skills include, but are not limited to, the ability to analyze, interpret, compare and contrast, and synthesize information about significant historical issues in both written and oral presentation. Candidates utilize appropriate research skills and primary and secondary sources. They engage in historiographic thinking, and are aware of multiple historical and geographic perspectives. Candidates appreciate the fundamental role geography plays in historical inquiry, and they understand and are able to apply the principles of political science and economics to historical analysis of California history. Candidates understand the relationship between California and U.S. history while also recognizing the political, social, economic, and geographic conditions that make California unique. (CSET Subtest 3)

- **Domain 4. Principles of American Democracy:** Candidates demonstrate knowledge of the foundations and contexts of the American democracy contained in the History-Social Science Content Standards for California Public Schools (1998) as outlined in the History-Social Science Framework for California Public Schools (2001) at a post secondary level of rigor. Candidates have both broad and deep conceptual understanding of the subject matter. Candidates study the principles of American democracy and analyze how those principles are put into practice in American politics and government. In their study of American democratic principles and practices, candidates apply higher level thinking skills. These skills include the ability to analyze the effect of governmental structures, economic conditions, and social forces on the distribution and use of power. These skills also include the ability to articulate and defend basic values and principles of democratic government. Candidates utilize appropriate research skills and primary and secondary sources. The study of social science must move beyond rote memorization. Therefore, candidates understand and are able to apply the principles and methodologies of political science, economics, and geography to the study of American democracy. Candidates recognize that knowledge and understanding of the social sciences are intrinsic to political analysis. (CSET Subtest 3)
- **Domain 5. Principles of Economics:** Candidates demonstrate knowledge of the foundations and contexts of the economics contained in the History-Social Science Content Standards for California Public Schools (1998) as outlined in the History-Social Science Framework for California Public Schools (2001) at a post secondary level of rigor. Candidates have both broad and deep conceptual understanding of the subject matter. Candidates study the principles of economics, both in relation to the United States economy and to the international economy. In their study of economics they apply higher level thinking skills. These skills include, but are not limited to, the ability to analyze, interpret, compare, contrast and synthesize information about significant issues in both written and oral presentation. Candidates utilize research skills and different methods of analysis, including the use of marginal analysis, equilibrium analysis, micro and macro analysis and positive and normative analysis skills. They use the skills of economic analysis to explain rational behavior of people and groups encountering experiences of everyday life in the form of tables and numbers, graphical analysis and single equations. Candidates demonstrate how solutions are derived from

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each form of economic analysis, how they are equivalent, and how they translate from one to another. Economic themes are intrinsic to all of the social science content domains. Therefore, candidates demonstrate the ability to explore issues that feature both theoretical and applied economics. (CSET Subtest 3)

- **Domain 6. Principles of Geography:** Candidates demonstrate knowledge of the foundations and contexts of the geography contained in the History-Social Science Content Standards for California Public Schools (1998) as outlined in the History-Social Science Framework for California Public Schools (2001) at a post secondary level of rigor. Candidates have both broad and deep conceptual understanding of the subject matter. Candidates study the principles of geography and their application to the study of history, political science, and economics. In their study of geography, they apply higher level thinking skills. These skills include (but are not limited to) the ability to analyze, interpret, compare and contrast, and synthesize information regarding the geographic character of landscapes, societies, and ecosystems across the earth. They know the five basic themes of geography as stated in the 2000 History-Social Science Framework: location; place; human and environmental interaction; movement; and regions. Candidates use basic map and globe skills, such as latitude/longitude, relative location, distance/direction, scale, legend, map projections, and distortion categories to describe and analyze the world from a geographic perspective. (CSET Subtest 1)

## Theatre

- **Domain 1. Creating:** Candidates have both broad and in-depth conceptual knowledge of the processes and roles involved in drama and theatre production. They understand how to envision/conceptualize and generate works of drama and theatre and how to organize, develop, refine, rehearse, and complete theatrical works. They understand the techniques, skills, and tools used in the creative process, as well as the collaborative nature of theatrical work.
- **Domain 2. Performing:** Candidates have both broad and in-depth conceptual knowledge of theatrical performance. They understand how to select, analyze, interpret, develop, and refine artistic work for presentation and are able to convey meaning through the presentation of artistic work. They understand the components of dramatic structure and technical theatre elements, the ways in which actors use a variety of exercises and techniques to create and refine character and create meaning, and the factors involved in presenting drama/theatre works to specific audiences.
- **Domain 3. Responding:** Candidates have both broad and in-depth conceptual knowledge of the process of responding to drama/theatre works. They understand how to perceive and analyze artistic work and are skilled at interpreting intent and meaning in individual works of drama/theatre. They appreciate the importance of reflection in understanding the impact of drama processes and theatre experiences; consider the role of emotions in connecting with and responding to drama/theatre works; recognize that interpretations of drama/theatre work are influenced by personal experiences, cultural contexts, and aesthetics; and apply considered criteria to evaluate drama/theatre work.

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- **Domain 4. Connecting:** Candidates have both broad and in-depth conceptual knowledge of the societal, cultural, and historical contexts of drama/theatre. They demonstrate basic knowledge of western and non-western theatre traditions, of the history and diversity of theatre, and of the roles and forms of theatre in societies past and present. Candidates demonstrate understanding of how empathy and the interrelationships between self and others influence and inform drama/theatre works. They have both broad and in-depth conceptual knowledge of ways in which theatre is connected to other art forms. They demonstrate knowledge of the important role that research plays in theatre.

## World Languages (Arabic, Armenian, Farsi, Filipino, Hmong, Khmer)

- **Domain 1. General Linguistics:** Candidates demonstrate knowledge of the nature, process, and components of language at the postsecondary level, as described in the American Council on the Teaching of Foreign Languages (ACTFL): Program Standards for the Preparation of Foreign Language Teachers (2002) and reflected in the Foreign Language Framework for California Public Schools, Kindergarten through Grade Twelve (2003). Candidates demonstrate both broad and deep conceptual understanding of the subject matter, including the universal characteristics of human languages and the ways in which linguistics describes and categorizes language structures. They analyze the processes by which languages change over time, understand how languages vary geographically, socially, and ethnographically, and recognize the family relationships among different languages. Candidates show an awareness of the communicative functions of language and how those functions vary depending upon the context and purpose of communication. They demonstrate a thorough understanding of language acquisition, including the processes by which new languages are acquired and the developmental patterns of language learning, and recognize that language acquisition involves the interrelationship of language and culture. (CSET Subtest 1, 4, 5)
- **Domain 2. Linguistics of the Target Language:** Candidates demonstrate a broad and deep knowledge of target-language linguistics at the postsecondary level, as described in the American Council on the Teaching of Foreign Languages (ACTFL): Program Standards for the Preparation of Foreign Language Teachers (2002) and reflected in the Foreign Language Framework for California Public Schools, Kindergarten through Grade Twelve (2003). Candidates demonstrate an understanding of the languages they teach, including sound systems, the rules by which words are formed, and the ways in which phrases, clauses, and sentences are structured, and can explain the major levels and features of the target-language grammar. They understand articulatory phonetics and are able to describe target-language phonological features, orthography, morphological rules, syntactic patterns, and semantics. Candidates are able to describe the rules for word and sentence formation, as well as the structure, function, and meaning of target language discourse, including features for producing coherence in spoken and written discourse, pragmatic features, and sociolinguistic features of target-language discourse. Candidates are familiar with rhetorical and stylistic devices, figures of speech, and the levels of language appropriate for various tasks and communicative purposes. In addition, they understand the historical changes in the target language and the

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variations among regional dialects, including differences in pronunciation, orthography, vocabulary, and grammatical structures, as well as register. (CSET Subtest 1, 4, 5)

- **Domain 3. Literary and Cultural Texts and Traditions:** Candidates demonstrate a broad and deep knowledge of literary and cultural texts and traditions, and of their contexts, at the postsecondary level, as described in the American Council on the Teaching of Foreign Languages (ACTFL): Program Standards for the Preparation of Foreign Language Teachers (2002) and reflected in the Foreign Language Framework for California Public Schools, Kindergarten through Grade Twelve (2003). Candidates are familiar with major literary and intellectual movements, genres, writers, and works. They can analyze, interpret, and synthesize ideas as well as critical issues from a wide range of writers and thinkers across a variety of forms and media. They understand the historical, social, and cultural contexts in which literary and cultural texts were created, the influence of these factors on ideas and forms of expression, and the ways in which those texts both reflect and shape the target culture. Finally, candidates use literary and cultural texts to interpret and reflect upon the perspectives of the target culture over time. (CSET Subtest 1, 4)
- **Domain 4. Cultural Analysis and Comparisons:** Candidates possess a broad and deep knowledge of the cultures associated with the target language and demonstrate an understanding of the interrelationships among the perspectives, practices, and products of those cultures at the postsecondary level, as described in the American Council on the Teaching of Foreign Languages (ACTFL): Program Standards for the Preparation of Foreign Language Teachers (2002) and reflected in the Foreign Language Framework for California Public Schools, Kindergarten through Grade Twelve (2003). Candidates recognize culture as a dynamic, interrelated system and employ a variety of processes to identify, analyze, and evaluate cultural themes, values, and ideas. They are able to explore relationships among cultural perspectives and social institutions, and they understand how cultural practices and products exemplify the perspectives of cultures associated with the target language. Candidates recognize important geographical features and analyze the impact of geographical factors on the development of cultures associated with the target language. They exhibit familiarity with contemporary and historical issues, significant works of art, cultural attitudes and priorities, daily living patterns, and social institutions. They are able to identify the roles and contributions of major political figures, artists, and cultural icons, and references made to them in the culture. Candidates are able to interpret ideas, values, and beliefs that represent the target culture's traditions and contemporary variations and are able to compare and contrast social, historical, and artistic traditions in the target culture with those of other cultures. (CSET Subtest 1)
- **Domain 5. Language and Communication: Listening Comprehension:** Candidates demonstrate proficiency in the comprehension of oral messages in the individual target language as described in the American Council on the Teaching of Foreign Languages (ACTFL): Program Standards for the Preparation of Foreign Language Teachers (2002) and reflected in the Foreign Language Framework for California Public Schools, Kindergarten through Grade Twelve (2003). For individual target languages, candidates may be asked to demonstrate all or some of the following knowledge and skills.

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Candidates demonstrate the ability to listen effectively and understand oral messages in the target language for various purposes in different contexts, including a variety of text types, and to accurately comprehend ideas and vocabulary across a range of content, including art, literature, politics, society, and current events, as well as everyday communications and interactions. They demonstrate the ability to comprehend and interpret both limited and extended oral messages, including monologues, conversations, news broadcasts, narratives and descriptions in various time frames, speeches, and debates. Candidates are not only able to identify the main ideas and supporting details of oral messages, but also to infer the meaning of unfamiliar words from their contexts, interpret oral messages on a number of levels, analyze them from multiple perspectives, and give detailed personal interpretations that are supported by a rich range of cultural knowledge and understanding. Finally, they demonstrate the ability to think critically about oral messages and to evaluate them in relation to logical and stylistic standards and social relationships, as well as the speaker's purposes, assumptions, and intended audience. (CSET Subtest 2)

- **Domain 6. Language and Communication: Reading Comprehension:** Candidates demonstrate proficiency in the comprehension of written texts in the individual target language as described in the American Council on the Teaching of Foreign Languages (ACTFL): Program Standards for the Preparation of Foreign Language Teachers (2002) and reflected in the Foreign Language Framework for California Public Schools, Kindergarten through Grade Twelve (2003). For individual target languages, candidates may be asked to demonstrate all or some of the following knowledge and skills. Candidates demonstrate the ability to read effectively and understand written texts in the target language for multiple purposes in different contexts, including a variety of text types, and to accurately comprehend ideas and vocabulary across a range of content, including art, literature, politics, society, and current events, as well as everyday communications and interactions. They demonstrate the ability to comprehend and interpret a variety of texts written in the target language, including expository prose, personal essays, newspaper and magazine articles, narratives and descriptions, correspondence, Web sites, electronic messages, and realia (e.g., signs, flyers, menus). Candidates interpret written texts on a number of levels, analyzing them from multiple perspectives, synthesizing concepts and ideas, and giving detailed personal interpretations that are supported by a rich range of cultural knowledge and understanding. Finally, they demonstrate the ability to think critically about what they read and to evaluate written texts in relation to logical and stylistic standards and social relationships, as well as the author's purposes, assumptions, and intended audience. (CSET Subtest 2)
- **Domain 7. Language and Communication: Oral Expression:** Candidates demonstrate proficiency in oral expression in the individual target language as described in the American Council on the Teaching of Foreign Languages (ACTFL): Program Standards for the Preparation of Foreign Language Teachers (2002) and reflected in the Foreign Language Framework for California Public Schools, Kindergarten through Grade Twelve (2003). For individual target languages, candidates may be asked to demonstrate all or some of the following knowledge and skills. Candidates demonstrate the ability to speak

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effectively in everyday situations and to react competently when asked to respond orally to a complication or an unexpected turn of events. They speak with good pronunciation and intonation and with sufficient accuracy to participate effectively in most formal and informal conversations on practical, social, professional, and abstract topics and are able to narrate and describe in major time frames, providing detailed accounts and exhibiting good control of aspect. Candidates demonstrate the ability to speak effectively in the target language for various purposes in different contexts, employing a variety of text types and accurately expressing ideas in culturally appropriate language across a range of content, including art, literature, politics, society, and current events, as well as everyday communications and interactions. Finally, they are able to deliver oral presentations on a wide range of topics, employing strategies and vocabulary tailored to the speaking situation, and present narrations and descriptions that relate relevant and supporting facts in extended and cohesive discourse. (CSET Subtest 2)

- **Domain 8. Language and Communication: Written Expression:** Candidates demonstrate proficiency in written communication in the individual target language as described in the American Council on the Teaching of Foreign Languages (ACTFL): Program Standards for the Preparation of Foreign Language Teachers (2002) and reflected in the Foreign Language Framework for California Public Schools, Kindergarten through Grade Twelve (2003). For individual target languages, candidates may be asked to demonstrate all or some of the following knowledge and skills. Candidates write in major time frames, employ vocabulary appropriate to purpose and audience, and use a variety of different syntactic structures. When writing texts of several paragraphs in length, they demonstrate competence in the use of a variety of cohesive devices and discourse strategies. Candidates demonstrate the ability to write effectively in the target language for various purposes in different contexts, employing a variety of text types, and to accurately express ideas in culturally appropriate language and vocabulary across a range of content, including art, literature, politics, society, and current events, as well as everyday communications and interactions. Finally, they demonstrate the ability to express themselves through formal and informal writings on practical, social, and professional topics and to write about issues and events of public and personal relevance through extended written texts. (CSET Subtest 2)

## **World Languages (Cantonese, French, German, Japanese, Korean, Mandarin, Punjabi, Russian, Spanish, Vietnamese)**

- **Domain 1. General Linguistics:** Candidates demonstrate knowledge of the nature, process, and components of language at the postsecondary level, as described in the American Council on the Teaching of Foreign Languages (ACTFL): Program Standards for the Preparation of Foreign Language Teachers (2002) and reflected in the Foreign Language Framework for California Public Schools, Kindergarten through Grade Twelve (2003). Candidates demonstrate both broad and deep conceptual understanding of the subject matter, including the universal characteristics of human languages and the ways in which linguistics describes and categorizes language structures. They analyze the processes by which languages change over time, understand how languages vary

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geographically, socially, and ethnographically, and recognize the family relationships among different languages. Candidates show an awareness of the communicative functions of language and how those functions vary depending upon the context and purpose of communication. They demonstrate a thorough understanding of language acquisition, including the processes by which new languages are acquired and the developmental patterns of language learning, and recognize that language acquisition involves the interrelationship of language and culture. (CSET Subtest 1)

- **Domain 2. Linguistics of the Target Language:** Candidates demonstrate a broad and deep knowledge of target-language linguistics at the postsecondary level, as described in the American Council on the Teaching of Foreign Languages (ACTFL): Program Standards for the Preparation of Foreign Language Teachers (2002) and reflected in the Foreign Language Framework for California Public Schools, Kindergarten through Grade Twelve (2003). Candidates demonstrate an understanding of the languages they teach, including sound systems, the rules by which words are formed, and the ways in which phrases, clauses, and sentences are structured, and can explain the major levels and features of the target-language grammar. They understand articulatory phonetics and are able to describe target-language phonological features, orthography, morphological rules, syntactic patterns, and semantics. Candidates are able to describe the rules for word and sentence formation, as well as the structure, function, and meaning of target language discourse, including features for producing coherence in spoken and written discourse, pragmatic features, and sociolinguistic features of target-language discourse. Candidates are familiar with rhetorical and stylistic devices, figures of speech, and the levels of language appropriate for various tasks and communicative purposes. In addition, they understand the historical changes in the target language and the variations among regional dialects, including differences in pronunciation, orthography, vocabulary, and grammatical structures, as well as register. (CSET Subtest 1)
- **Domain 3. Literary and Cultural Texts and Traditions:** Candidates demonstrate a broad and deep knowledge of literary and cultural texts and traditions, and of their contexts, at the postsecondary level, as described in the American Council on the Teaching of Foreign Languages (ACTFL): Program Standards for the Preparation of Foreign Language Teachers (2002) and reflected in the Foreign Language Framework for California Public Schools, Kindergarten through Grade Twelve (2003). Candidates are familiar with major literary and intellectual movements, genres, writers, and works. They can analyze, interpret, and synthesize ideas as well as critical issues from a wide range of writers and thinkers across a variety of forms and media. They understand the historical, social, and cultural contexts in which literary and cultural texts were created, the influence of these factors on ideas and forms of expression, and the ways in which those texts both reflect and shape the target culture. Finally, candidates use literary and cultural texts to interpret and reflect upon the perspectives of the target culture over time. (CSET Subtest 1)
- **Domain 4. Cultural Analysis and Comparisons:** Candidates possess a broad and deep knowledge of the cultures associated with the target language and demonstrate an understanding of the interrelationships among the perspectives, practices, and products of those cultures at the postsecondary level, as described in the American Council on

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the Teaching of Foreign Languages (ACTFL): Program Standards for the Preparation of Foreign Language Teachers (2002) and reflected in the Foreign Language Framework for California Public Schools, Kindergarten through Grade Twelve (2003). Candidates recognize culture as a dynamic, interrelated system and employ a variety of processes to identify, analyze, and evaluate cultural themes, values, and ideas. They are able to explore relationships among cultural perspectives and social institutions, and they understand how cultural practices and products exemplify the perspectives of cultures associated with the target language. Candidates recognize important geographical features and analyze the impact of geographical factors on the development of cultures associated with the target language. They exhibit familiarity with contemporary and historical issues, significant works of art, cultural attitudes and priorities, daily living patterns, and social institutions. They are able to identify the roles and contributions of major political figures, artists, and cultural icons, and references made to them in the culture. Candidates are able to interpret ideas, values, and beliefs that represent the target culture's traditions and contemporary variations and are able to compare and contrast social, historical, and artistic traditions in the target culture with those of other cultures. (CSET Subtest 1)

- **Domain 5. Language and Communication: Listening Comprehension:** Candidates demonstrate proficiency in the comprehension of oral messages in the individual target language as described in the American Council on the Teaching of Foreign Languages (ACTFL): Program Standards for the Preparation of Foreign Language Teachers (2002) and reflected in the Foreign Language Framework for California Public Schools, Kindergarten through Grade Twelve (2003). For individual target languages, candidates may be asked to demonstrate all or some of the following knowledge and skills. Candidates demonstrate the ability to listen effectively and understand oral messages in the target language for various purposes in different contexts, including a variety of text types, and to accurately comprehend ideas and vocabulary across a range of content, including art, literature, politics, society, and current events, as well as everyday communications and interactions. They demonstrate the ability to comprehend and interpret both limited and extended oral messages, including monologues, conversations, news broadcasts, narratives and descriptions in various time frames, speeches, and debates. Candidates are not only able to identify the main ideas and supporting details of oral messages, but also to infer the meaning of unfamiliar words from their contexts, interpret oral messages on a number of levels, analyze them from multiple perspectives, and give detailed personal interpretations that are supported by a rich range of cultural knowledge and understanding. Finally, they demonstrate the ability to think critically about oral messages and to evaluate them in relation to logical and stylistic standards and social relationships, as well as the speaker's purposes, assumptions, and intended audience. (CSET Subtest 3)
- **Domain 6. Language and Communication: Reading Comprehension:** Candidates demonstrate proficiency in the comprehension of written texts in the individual target language as described in the American Council on the Teaching of Foreign Languages (ACTFL): Program Standards for the Preparation of Foreign Language Teachers (2002) and reflected in the Foreign Language Framework for California Public Schools,

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Kindergarten through Grade Twelve (2003). For individual target languages, candidates may be asked to demonstrate all or some of the following knowledge and skills.

Candidates demonstrate the ability to read effectively and understand written texts in the target language for multiple purposes in different contexts, including a variety of text types, and to accurately comprehend ideas and vocabulary across a range of content, including art, literature, politics, society, and current events, as well as everyday communications and interactions. They demonstrate the ability to comprehend and interpret a variety of texts written in the target language, including expository prose, personal essays, newspaper and magazine articles, narratives and descriptions, correspondence, Web sites, electronic messages, and realia (e.g., signs, flyers, menus). Candidates interpret written texts on a number of levels, analyzing them from multiple perspectives, synthesizing concepts and ideas, and giving detailed personal interpretations that are supported by a rich range of cultural knowledge and understanding. Finally, they demonstrate the ability to think critically about what they read and to evaluate written texts in relation to logical and stylistic standards and social relationships, as well as the author's purposes, assumptions, and intended audience.

## (CSET Subtest 3)

- **Domain 7. Language and Communication: Oral Expression:** Candidates demonstrate proficiency in oral expression in the individual target language as described in the American Council on the Teaching of Foreign Languages (ACTFL): Program Standards for the Preparation of Foreign Language Teachers (2002) and reflected in the Foreign Language Framework for California Public Schools, Kindergarten through Grade Twelve (2003). For individual target languages, candidates may be asked to demonstrate all or some of the following knowledge and skills. Candidates demonstrate the ability to speak effectively in everyday situations and to react competently when asked to respond orally to a complication or an unexpected turn of events. They speak with good pronunciation and intonation and with sufficient accuracy to participate effectively in most formal and informal conversations on practical, social, professional, and abstract topics and are able to narrate and describe in major time frames, providing detailed accounts and exhibiting good control of aspect. Candidates demonstrate the ability to speak effectively in the target language for various purposes in different contexts, employing a variety of text types and accurately expressing ideas in culturally appropriate language across a range of content, including art, literature, politics, society, and current events, as well as everyday communications and interactions. Finally, they are able to deliver oral presentations on a wide range of topics, employing strategies and vocabulary tailored to the speaking situation, and present narrations and descriptions that relate relevant and supporting facts in extended and cohesive discourse. (CSET Subtest 3)
- **Domain 8. Language and Communication: Written Expression:** Candidates demonstrate proficiency in written communication in the individual target language as described in the American Council on the Teaching of Foreign Languages (ACTFL): Program Standards for the Preparation of Foreign Language Teachers (2002) and reflected in the Foreign Language Framework for California Public Schools, Kindergarten through Grade Twelve (2003). For individual target languages, candidates may be asked to demonstrate all or

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some of the following knowledge and skills. Candidates write in major time frames, employ vocabulary appropriate to purpose and audience, and use a variety of different syntactic structures. When writing texts of several paragraphs in length, they demonstrate competence in the use of a variety of cohesive devices and discourse strategies. Candidates demonstrate the ability to write effectively in the target language for various purposes in different contexts, employing a variety of text types, and to accurately express ideas in culturally appropriate language and vocabulary across a range of content, including art, literature, politics, society, and current events, as well as everyday communications and interactions. Finally, they demonstrate the ability to express themselves through formal and informal writings on practical, social, and professional topics and to write about issues and events of public and personal relevance through extended written texts. (CSET Subtest 3)

## Multiple Subjects

### *Reading, Language, and Literature*

#### Domain 1: Language and Linguistics

- 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.

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- 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 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 (for aural/oral languages), 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, note taking). 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

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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, and their characteristics (e.g., organization), including narratives, persuasive pieces, research presentations, poetry recitations, and responses to literature. They apply understandings of language development stages, from pre-production (beginning) to intermediate fluency, to children's developing abilities in such areas. Candidates analyze speech in terms of presentation components (e.g., volume, pace), pronunciation fluency, and identify the integration of nonverbal components (e.g., gesture) with verbal elements (e.g., 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 also demonstrate an understanding of the potential impact on non-written presentations of images, sound, and other features from electronic media.
- 2.5 Research Strategies.** Candidates for Multiple Subject Teaching Credentials demonstrate their ability to use a variety of research sources, both print and electronic. They interpret such research, putting to use their findings and interpretations to construct their own reports and narratives. Candidates also understand the importance of citing research sources, using recognizable and accepted conventions for doing so.

## 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

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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.

## *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

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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

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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.

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## *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.

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## 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

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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).

## ***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

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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 diagram life cycles of familiar organisms (e.g., butterfly, frog, mouse). They explain the factors that affect the growth and development of plants, such as light, gravity, and stress. They distinguish between sexual and asexual reproduction, and understand the process of cell division (mitosis), the types of cells and their functions, and the replication of plants and animals. They distinguish between environmental and genetic sources of variation, and understand the principles of natural and artificial selection. They know how evidence from the fossil record, comparative anatomy, and DNA sequences can be used to support the theory that life gradually evolved on earth over billions of years. They understand the basis of Darwin's theory, that species evolved by a process of natural selection.

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## 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.

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## ***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.

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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.

## ***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.

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## 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.

## *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

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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.

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## **Appendix B**

### California Code of Regulations, Title 5. Section 80005

- (1) Agriculture: agricultural management, agricultural mechanics, agricultural science, animal science, forestry, horticulture, landscaping, and plant science;
- (2) Art: art appreciation, art history, arts and crafts, art theory, calligraphy, cartooning, ceramics, commercial art, costume design, crafts, design, drawing, humanities, illustration, interior decoration, jewelry, leathermaking, painting, photography, sculpture, stagecraft, and yearbook;
- (3) Business: accounting, business communications, business English, business mathematics, business management, business marketing, computer concepts and applications, consumer education, data processing, economics, general office occupations, keyboarding, marketing, shorthand, typewriting, and word processing;
- (4) Dance: composition and production, folk/traditional, hip hop, ballet, modern, jazz, world;
- (5) English: composition, creative writing, debate, forensics, grammar, humanities, journalism, language arts, language structure, literature, poetry, public speaking, speech, and yearbook;
- (6) Health: child development, family life, human sexuality, nutrition, sexually transmitted disease education, and substance abuse;
- (7) Home Economics: child development, clothing, consumer education, family life, foods, family economics, housing, human development, interior design, nutrition, parenting, and textiles;
- (8) Industrial and Technology Education: automotive mechanics, carpentry, computer technology, construction, drafting, electricity, electronics, industrial crafts, industrial design, metals, millwork, photography, plastics, radio and television, technical science/power mechanics, welding, and woods;
- (9) Mathematics: basic or general mathematics, algebra, calculus, computer science, consumer mathematics, geometry, mathematical analysis, statistics and probability, and trigonometry;
- (10) Music: instrumental music, music appreciation, music theory, musical theater, and vocal music;
- (11) Physical Education: aquatics, fundamental and creative movement, gymnastics, interscholastic sports, motor development or learning, physical conditioning, sports, and weightlifting
- (12) Science: Biological Science: anatomy, biology, botany, ecology, environmental science, evolution, genetics, physiology, and zoology;

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- (13) Science: Chemistry: chemical reactions, qualitative analysis, quantitative analysis, and structure and stability;
- (14) Science: Geoscience: astronomy, cosmology, earth science, forestry, geology, meteorology, oceanography, and paleontology;
- (15) Science: Physics: energy, mechanics, and thermodynamics;
- (16) Social Science: American government, anthropology, contemporary issues, current events, cultural studies, economics, ethnic studies, geography, government, history, humanities, international government, law, politics, psychology, sociology, United States history, and world history;
- (17) Theater: acting, directing, performance and production, improvisation, musical theater, playwriting, stagecraft, make-up and costume design;
- (18) World Languages: courses in culture, grammar, composition, language structure, and literature of the language listed on the document.