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Action

Public Hearing

Proposed Amendments to Title 5 of the California Code of Regulations Pertaining to the Supplementary Authorization in Computer Science

Executive Summary: This agenda item presents proposed amendments to Title 5 of the California Code of Regulations pertaining to the Supplementary Authorization in Computer Science. The proposed amendments also include general clean-up of the regulations section.

Recommended Actions:

Staff recommends that the Commission adopt the proposed amendments to the regulations pertaining to the Supplementary Authorization in Computer Science

Presenters: David Crable, Program Analyst,
Certification Division

Strategic Plan Goal

I. Educator Quality

- a) Maintain expectations for educator preparedness and performance that are responsive to the needs of California's diverse student population and promote 21st century teaching and learning.

Proposed Amendments to Title 5 of the California Code of Regulations Pertaining to the Supplementary Authorization in Computer Science

Introduction

This rulemaking action proposes the Commission on Teacher Credentialing adopt additions and amendments to Title 5 of the California Code of Regulations (CCR) sections 80057 and 80089 related to the Supplementary Authorization in Computer Science as approved by the Commission at the June 2015 meeting. The proposed regulations implement, interpret, and make specific Education Code section 44256 pertaining to requirements for supplementary authorizations. The proposed amendments also include general clean-up of the regulation section.

Background

California Education Code section 44256 specifies the types of supplementary authorizations that may be added to elementary and secondary teaching credentials, grade level limitations, and the units required so those specific elements remain the same as the current requirements. This section of statute also provides that the Commission, by regulation, may require evidence of additional competence as a condition for instruction in particular subjects.

To address concerns that educators receive the appropriate preparation to teach a range of computer science courses relevant to California students beyond basic computer functions and applications, at the June 2015 Commission meeting (<http://www.ctc.ca.gov/commission/agendas/2015-06/2015-06-7B.pdf>) Commissioners took action to approve proposed additions and amendments to Title 5 regulations pertaining to the Supplementary Authorization in Computer Concepts and Applications (CCA). The proposed amendments would strengthen the required Content Areas of Study for the Supplementary Authorization and to change the name of the Supplementary Authorization to Computer Science to reflect this added dimension for the authorization.

The proposed amendments reflect a change in focus for the Supplementary Authorization from content preparation for teaching basic computer use, keyboarding, and software applications to more relevant 21st century content inclusive of the range of Computer Science courses taught in California public schools. The proposed amendments strengthen the Content Areas of Study required to obtain the supplementary authorization to ensure teachers are prepared with the requisite content knowledge to provide instruction in the range of K-12 Computer Science courses now being made available in California public schools.

The chart below provides the scope of the current Supplementary Authorizations in CCA and Content Areas of Study now required and the proposed modifications for the new Supplementary Authorizations in Computer Science, in the far right-hand column indicated by underlined text.

Authorization	Unit Requirements	Content Areas of Study- Computer Concepts and Applications	
		Current	Proposed
<p><i>Introductory Supplementary Authorization</i></p> <ul style="list-style-type: none"> Listed on Multiple Subject/Elementary Credentials for teaching grades 9 and below Listed on Single Subject/Secondary Credentials for teaching curriculum level grade 9 and below; students may be in grades K-12 	20 Semester Units ¹ or 10 Semester Units of Upper Division or Graduate Level Coursework	<p>Requires coursework covering each content area:³</p> <ul style="list-style-type: none"> software evaluation and selection hardware operation and functions² classroom uses of computers 	<p>Requires coursework covering each content area:³</p> <ul style="list-style-type: none"> computational thinking computing practice and programming computers and communication devices impacts of computing⁴ (e.g., social, ethical, legal)
<p><i>Specific Subject Supplementary Authorization</i></p> <ul style="list-style-type: none"> Listed only on Single Subject/Secondary Credentials for teaching content in grades K-12 	20 Semester Units ¹ or 10 Semester Units of Upper Division or Graduate Level Coursework	<ul style="list-style-type: none"> Specific Subject Supplementary Authorizations have no required content areas. All coursework must fall within the academic department for the subject category. 	<p>Requires coursework covering each content area:³</p> <ul style="list-style-type: none"> computer programming data structures and algorithms digital devices, systems and networks software design impacts of computing⁴ (e.g., social, ethical, legal)

¹ All lower division units or a combination of upper and lower division units.

² An Introduction to Data Processing may be used for hardware operations and functions. Java, Cobol, Basic, and Pascal are examples of computer languages and do not apply to hardware but are acceptable as electives toward the overall unit requirement.

³ The balance of the units may be in any course that falls within the academic department for that subject category. Computer classes in the Education Department may be used **including a pedagogy course in computer science from either department.**

⁴ These topics may be included within courses covering the other content areas.

For the Introductory Supplementary Authorization in Computer Science, coursework completed must cover the following content areas:

- **Computational thinking:** involves solving problems and designing systems, using fundamental computing concepts such as decomposition, data representation, generalization/abstraction, and algorithms.
- **Computing practice and programming:** includes expertise in at least one block--- based, visual (drag-and-drop) programming language (e.g., Alice, Blockly, Kodu, Logo, Scratch, Snap!) or a modern, high-level programming language.
- **Computer and communications devices:** covers the major components and functions of digital devices and the computing systems they compose.
- **Impacts of computing:** includes the social, ethical, and legal issues and impacts of computing, as well as the contributions of computer science to current and future innovations in the arts, business, humanities, medicine, and science. These topics may be included within courses covering the other content areas.

For the Specific Supplementary Authorization in Computer Science, coursework completed must cover the following content areas:

- **Computer Programming:** includes expertise in at least one modern, high-level programming language (e.g., Python, Java, C/C++/C#).
- **Data structures and algorithms:** covers data representation, abstraction, searching and sorting in the context of solving problems using programming and computational tools.
- **Digital devices, systems and networks:** covers computer and communication devices and the systems they compose, including the concepts and abstractions that enable stand-alone, networked, and mobile digital devices to operate and communicate.
- **Software design:** covers the process of planning, engineering and implementing a software system to solve a problem, typically using both a design and a programming methodology, such as object-oriented and functional approaches.
- **Impacts of computing:** includes the social, ethical, and legal issues and impacts of computing, as well as the contributions of computer science to current and future innovations in the arts, business, humanities, medicine, and science. These topics may be included within courses covering the other content areas.

The chart also includes as approved at the June 2015 meeting the bifurcation of the required Content Areas of Study for both Introductory and Specific Subject Supplementary Authorizations in Computer Science. Presently, the holder of a Single Subject Teaching Credential may only obtain the Specific Subject Supplementary Authorization in CCA, which authorizes departmentalized teaching in the subject area in grades K-12 but does not require any specific Content Areas of Study within the semester units completed. The addition of an Introductory Supplementary Authorization in this content area provides flexibility to choose the level of Supplementary Authorization (Introductory or Specific) that is most appropriate, as some Single Subject Credential holders are teaching at the elementary and middle school levels, and clearly defines the coursework required to obtain the Supplementary Authorization that is appropriate for each level. This provides for a thorough but introductory level of content for teaching computer science intended for students through grade 9 that also aligns with the Content Areas of Study coursework requirements for holders of a Multiple Subject Credential teaching computer science to students in the same grade levels.

As specified in statute, all teachers who are currently authorized to teach the range of courses in Computer Science will remain authorized (e.g., holders of a Supplementary Authorization in CCA or a Single Subject teaching credential in Mathematics, Business, or Industrial Technology Education) even if the proposed amendments are adopted within regulations.

Only teachers initially earning one of these supplementary authorizations in the future would be required to satisfy the revised Content Areas of Study and be issued the Supplementary Authorization in Computer Science. The proposed regulations include an effective date of April 1, 2016 in order to provide transition time for teachers currently pursuing a Supplementary Authorization in CCA.

Non-Substantive Changes

The proposed regulations include non-substantive changes in 5 CCR sections 80057 and 80089

such as the removal of options to obtain supplementary authorizations that have expired and updating of sections referencing examinations previously used to verify qualifications for supplementary authorizations in languages other than English that are no longer available and have been replaced with the current examinations.

Summary of Proposed Amendments

80057.5

(b)(1): Proposes deletion of outdated information that refers to examinations no longer administered and no longer valid for certification use. Proposes adding passage of the appropriate CSET examinations as the current examinations valid for certification that may be used as verification of proficiency for individuals seeking certification in a language other than English.

(b)(2): Proposes deletion of outdated information that refers to examinations no longer administered and no longer valid for certification use. Proposes adding information regarding the current language assessments approved for certification use may be used as verification of proficiency for individuals seeking certification in a language other than English.

(b)(3): Proposes deletion of outdated information no longer used for certification. Proposes adding updated information that possession of a degree from a foreign institution where instruction was provided solely in the target language may be used as verification of proficiency for individuals seeking certification in a language other than English.

(b)(4): Proposes deletion of outdated information that refers to programs no longer available for certification use. Proposes adding language that the assessment currently used in bilingual programs approved by the Commission may be used as verification of proficiency for individuals seeking certification in a language other than English.

(c)(4): Proposes changing the name of the supplementary authorization from Computer Concepts and Applications to Computer Science to more accurately reflect the content to be taught under the revised supplementary authorization. Proposes deletion of the current content areas of study as insufficient to meet the educational needs of today's student population. Proposes new content areas of study required to obtain the revised Computer Science supplementary authorization so educators will be sufficiently prepared to provide meaningful instruction to California students.

(f): Proposes deleting the text currently in subsection (f) as it will be moved to subsection (g) to retain a logical order of the subsections listing the requirements for the supplementary authorization. Proposes adding definitions of the course content required to align with the proposed modifications in changing the Computer Concepts and Applications supplementary authorization to Computer Science.

(g): Proposes adding the text previously found in subsection (f) to subsection (g) to retain a logical order of the subsections listing the requirements for the supplementary authorization. Proposes deleting the language previously found in subsection (g) as it refers to an option that has expired and no longer available to individuals seeking a supplementary authorization.

(h): Proposes the addition of subsection (h) to provide a date of April 1, 2016 as transition time for implementation of the new requirements. This will provide some leeway for individuals who may be in the middle of completing the current requirements for the supplementary authorization in CCA when the regulations approve and not force anyone to have to change in mid-stream, which would likely create an unfair burden by costing them additional money and time.

80089

Proposes deleting subsection (c) as it refers to an option that has expired and is no longer available to individuals seeking a supplementary authorization.

80089.1

(a): Proposes changing the name of the supplementary authorization listed as Computer Concepts and Applications to Computer Science to more accurately reflect the content in the proposed amendments to the content areas of study and coursework required to obtain the supplementary authorization. Proposes removing one of the instances of the subject area Metals (Industrial Arts) from the list of specific supplementary authorizations as duplicative.

(e): Proposes the addition of subsection (e) to provide definitions for the course content required to obtain the supplementary authorization in Computer Science. Currently, there are no defined courses to obtain the specific supplementary authorization in Computer Concepts and Applications, providing no guarantee that there is consistency in the preparation educators teaching this content receive, and thus no way to assure students receive instruction relevant to their academic needs. The clearly defined categories of coursework provided with the proposed new content areas of study that would be required to obtain the revised Computer Science supplementary authorization will assure educators are sufficiently prepared to provide meaningful and relevant instruction to California students.

(f): Proposes the addition of subsection (f) to provide a date of April 1, 2016 as transition time for implementation of the new requirements. This will provide some leeway for individuals who may be in the middle of completing the current requirements for the supplementary authorization in CCA when the regulations approve and not force anyone to have to change in mid-stream, which would likely create an unfair burden by costing them additional money and time.

80089.2

(a)(1): Proposes deletion of outdated information that refers to examinations no longer administered and no longer valid for certification use. Proposes adding passage of the appropriate CSET examinations as the current examinations valid for certification that may be used as verification of proficiency for individuals seeking certification in a language other than English.

(a)(2): Proposes deletion of outdated information that refers to examinations no longer administered and no longer valid for certification use. Proposes adding information regarding the current language assessments approved for certification use may be used as verification of proficiency for individuals seeking certification in a language other than English.

(a)(3): Proposes deletion of outdated information no longer used for certification. Proposes adding updated information that possession of a degree from a foreign institution where instruction was provided solely in the target language may be used as verification of proficiency for individuals seeking certification in a language other than English.

(a)(4): Proposes deletion of outdated information that refers to programs no longer available for certification use. Proposes adding language that the assessment currently used in bilingual programs approved by the Commission may be used as verification of proficiency for individuals seeking certification in a language other than English.

(b)(13): Proposes changing the word “on” to “one” to correct a typographical error.

(b)(14): Proposes the addition of subsection (14) to add an Introductory Supplementary Authorization in Computer Science for Single Subject Credential holders. The addition of this new option provides Single Subject Credential holders the flexibility to pursue both content levels of the supplementary authorization content for those who may be teaching Computer Science at the elementary and middle school levels.

(e): Proposes the addition of subsection (e) to provide definitions for the course content required to obtain the supplementary authorization in Computer Science. The proposed definitions for the new content areas of study required to obtain the revised Computer Science supplementary authorization will assure educators are sufficiently prepared to provide meaningful instruction to California students.

(f): Proposes the addition of subsection (f) to provide a date of April 1, 2016 as transition time for implementation of the new requirements. This will provide some leeway for individuals who may be in the middle of completing the current requirements for the supplementary authorization in CCA when the regulations approve and not force anyone to have to change in mid-stream, which would likely create an unfair burden by costing them additional money and time.

Documents Incorporated by Reference:

None.

Documents Relied Upon in Preparing Regulations:

June 2015 Commission agenda item 7B:

<http://www.ctc.ca.gov/commission/agendas/2015-06/2015-06-7B.pdf>

Disclosures Regarding the Proposed Actions

The Commission has made the following initial determinations:

Mandate to local agencies or school districts: None.

Other non-discretionary costs or savings imposed upon local agencies: None.

Cost or savings to any state agency: None.

Cost or savings in federal funding to the state: None.

Significant effect on housing costs: None.

Significant statewide adverse economic impact directly affecting businesses including the ability of California businesses to compete with businesses in other states: None.

These proposed regulations will not impose a cost on local agencies or school districts that must be reimbursed in accordance with Part 7 (commencing with section 17500) of the Government Code.

Cost impacts on a representative private person or business: The Commission is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

Statement of the Results of the Economic Impact Assessment [Govt. Code § 11346.5(a)(10)]: The Commission concludes that it is (1) unlikely that the proposal will create any jobs within the State of California; 2) unlikely that the proposal will eliminate any jobs within the State of California; 3) unlikely that the proposal will create any new businesses with the State of California; 4) unlikely that the proposal will eliminate any existing businesses within the State of California; and 5) unlikely the proposal would cause the expansion of businesses currently doing business within the State of California.

The Commission anticipates that the proposed amendments will benefit the welfare of students attending public schools in the State of California by assuring teachers seeking to teach Computer Science courses will have completed the comprehensive preparation required to provide meaningful instruction in the range of K-12 Computer Science courses available in California public schools.

The proposed regulations will promote fairness and prevent discrimination by ensuring uniformity in the requirements individuals are held to when providing instruction to students in the content area of Computer Science. The Commission does not anticipate that the proposed regulations will result in the protection of public health and safety, worker safety, or the environment, the prevention of social inequity or an increase in openness and transparency in business and government.

Effect on small businesses: The proposed regulations will not have a significant adverse economic impact upon business. The proposed regulations apply only to individuals applying for credentials that authorize service in California's public schools.

Notice of Proposed Rulemaking Mailing List and Responses

Mailing List

- Members of the Commission on Teacher Credentialing
- California County Superintendents of Schools
- Credential Analysts at the California County Superintendents of Schools Offices

- Superintendents of Selected California School Districts
- Deans and Directors at the California Institutions of Higher Education with Commission-approved programs
- Credential Analysts at the California Institutions of Higher Education with Commission-approved programs
- Presidents of Selected Professional Educational Associations

Also placed on the Internet at <http://www.ctc.ca.gov>.

Tally of Responses

As of today, September 25, 2015 the Commission had received the following written responses to the public announcement:

Support

- 1 organizational opinions
- 2 personal opinion

Opposition

- 0 organizational opinions
- 1 personal opinions

Total Responses: 4

Written Responses Representing Organizations in Support

1. Lissa Clayborn, Deputy Executive Director/Chief Operating Officer, Computer Science Teachers Association (CSTA)

Written Responses Representing Individuals in Support

1. Aimée Dorr, Provost, Executive Vice President for Academic Affairs, University of California
2. Julia Brush, Faculty Advisor, CalStateTEACH

Written Responses Representing Individuals in Opposition

1. Sharie Ortega, Credentials Supervisor, Imperial County Office of Education

Comment: "The proposed regulations include an effective date of April 1, 2016 in order to provide transition time for teachers currently pursuing a Supplementary Authorization in CCA." I do not agree that this is an adequate amount of time for the transition.

Although the proposed changes to upgrade the computer authorizations are well warranted, I feel the proposed transition time for teachers currently pursuing a Supplementary Authorization in CCA is not long enough. I just submitted an application last week for a CCA supplementary authorization. It has been taking CTC 2-3 weeks just to post receipt of applications and then another 9-10 weeks to process them. If any additional documentation is required, it can extend this process another 4 weeks. That could mean my recent CCA supplementary authorization application is not finalized for up to 17 weeks, putting us at mid-December.

If the application is denied for an additional course, I'm not sure the applicant could find an applicable course, complete it, obtain official transcripts, and have the application to CTC by

April 1, 2016. We are in a remote location with limited IHE resources and I would not want this teacher to be disenfranchised, especially when she is currently assigned to teach computer applications. I would appreciate the Commission's consideration in extending the transition deadline up to a year later—and preferably at the end of the school year, i.e., July 1, 2017.

This extended time will allow those individuals currently serving on an initial limited assignment authorization for a computer applications assignment to be notified of the changes and allow them adequate time to take additional coursework to qualify for the current CCA supplementary authorization.

Response: With the initial proposal of this change to the Supplementary Authorization in CCA which the Commission approved moving forward with in June 2015, it was felt that 10 months was sufficient time for those who had already begun pursuing the authorization to be aware of the upcoming changes and complete whatever coursework would be needed. In reality, a number of educators who pursue this supplementary authorization use a series of coursework that has been developed by a specific institution of higher education which only requires the completion of 4 upper division courses and can be completed online.

Education Week recently noted that participation in computer science advanced placement exams increased 25% from 2014-2015 (More Students Taking AP Physics, Computer Science Exams, Education Week, September 3, 2015) In consideration of the rapid movement of middle and secondary schools toward increasing their emphasis on computer science courses, as well as the recent sharp rise in student participation in advanced placement examinations in computer science, the need for educators to have stronger preparation in these areas has become urgent. Thus, it was felt that the time allowed should only be for those who were well along toward meeting the current requirements for the Supplementary Authorization and any who had not yet begun the coursework or who had just started should be encouraged to seek the new requirements as this would be to the best benefit of California's students who need educators who can help them meet the challenges ahead.

Staff Recommendation

Staff recommends that the Commission adopt the proposed amendments to sections 80057 and 80089 of Title 5 of the California Code of Regulations pertaining to the Supplementary Authorization in Computer Science.

CALIFORNIA CODE OF REGULATIONS TITLE 5. EDUCATION DIVISION 8. COMMISSION ON TEACHER CREDENTIALING

§ 80057.5. Adding Supplementary Authorizations to Teaching Credentials Used Predominantly in Elementary Schools.

(a) The holder of a valid teaching credential specified in Education Code Section 44256(b) may have one or more of the subjects listed in subsection (c) added as a supplementary authorization. The candidate or an approved institution shall verify completion of either (1) or (2) below:

- (1) 20 semester hours or 10 upper division semester hours of non-remedial collegiate course work in each subject from subsection (c) to be listed, or
- (2) a collegiate major in a subject directly related to each subject from subsection (c) to be listed.

A "C" grade or above in any course used to meet the provisions of this section shall be required.

Non-remedial coursework for the purposes of this section shall be defined as coursework that is applicable toward a bachelor's degree or a higher degree at a regionally accredited college or university.

- (b) Candidates seeking supplementary authorization in any language other than English shall, in addition to requirements specified in subsection (a), submit verification of having either (1), (2), (3), or (4) below:

- (1) ~~passed the oral language portion of the Bilingual Certificate of Competence Examination in the language to be listed on the credential. Such verification shall be in the form of a letter from any institution or other educational agency, approved by the Commission as an assessor agency for the Bilingual Certificate of Competence. Whenever a written assessment instrument for a language other than Spanish is not available, a panel may be used by assessor agencies to assess a candidate's knowledge of the target language competencies, in accordance with Commission guidelines regulating assessment for languages other than Spanish,~~ passed the Language and Communication/Listening and Oral Communication section (Test II or III depending on the specific language) of the CSET: World Languages Examinations in the target language verified by an official score report. Passing examination scores are valid for certification use for five years from the individual test date; or
- (2) ~~passed the speaking and listening sections of Test 6 of the Crosscultural Language and Academic Development/Bilingual Crosscultural Language and Academic Development (CLAD/BCLAD) Examinations described in Section 80015.3 in the language to be listed on the credential~~ if no CSET: World Languages Examination is available in the target language, evidence of having passed an assessment performed by an approved organization covering the integrated communication skills of listening, speaking, reading and writing in the target language; or
- (3) ~~oral proficiency in the language to be listed on the credential at a level equivalent to that of a person with a bachelor's degree with a major in that language. This level of proficiency shall be verified by a letter from the Chair of the Language Department of a regionally accredited four year college or university~~ possession of a three-year or higher degree from a foreign institution in which all instruction was delivered in the target language. The foreign institution must be equivalent in status to a regionally-accredited institution of higher education in the United States; or
- (4) ~~oral proficiency in the language to be listed on the credential at the level required to complete a Bilingual Emphasis or Bilingual Crosscultural Language and Academic Development (BCLAD) Emphasis Credential Program as verified by a letter from a person authorized to issue such verification by the college or university that offers such a program~~

passed an assessment covering the integrated communication skills of listening, speaking, reading and writing administered by a California college or university as a part of its Commission-approved bilingual authorization program in the target language.

- (c) The following subjects may be added as supplementary authorizations to a valid teaching credential specified in Education Code Section 44256(b):
- (1) Agriculture, including at least one course in each of the following areas: animal science, plant science, and agricultural mechanics;
 - (2) Art, including at least one course in each of the following areas: drawing and painting, art history or appreciation, and crafts;
 - (3) Business, including at least one course in each of the following areas: business management, business marketing or introduction to business, computer concepts and applications, economics, business communications or business English, and accounting;
 - (4) ~~Computer Concepts and Applications Science~~, including at least one course in each of the following areas: software evaluation and selection, hardware operation and functions, and classroom uses of computers—computational thinking; computing practice and programming; computer and communications devices; and impacts of computing. The course of study must cover all content areas but impacts of computing may be met within a single course also used to meet one of the other required content areas;
 - (5) English, including at least one course in each of the following areas: grammar or language structure, composition, and literature;
 - (6) A Language Other Than English (Specify), including at least one course in the language covering each of the following areas: grammar, composition, conversation, and literature;
 - (7) Health Science, including at least one course in each of the following areas: substance abuse (including alcohol, drug, and tobacco), family life education (including human sexuality, HIV/AIDS, and sexually transmitted diseases), nutrition, comprehensive school health systems or programs, and health education theory, behavior, or foundations;
 - (8) Home Economics, including at least one course in each of the following areas: food and nutrition, clothing, child development, and family life and parenting;
 - (9) Industrial Arts, including at least one course in each of the following areas: drafting or graphic arts, woods or metals, and electricity or electronics;
 - (10) Mathematics, including at least one course in each of the following areas (all course work shall be at least at a level for which intermediate algebra is a prerequisite): algebra, geometry, and development of the real number system or introduction to mathematics; or three courses in calculus or other mathematics courses for which algebra and geometry are prerequisites;
 - (11) Music, including at least one course in each of the following areas: vocal music, instrumental music, music history or appreciation, and music theory;
 - (12) Physical Education, including at least one course in each of the following areas: team sports and games, fundamental and creative movement skills (such as dance and

- gymnastics), human movement, motor development, and/or motor learning, and individual, dual, nontraditional and global sports and games (such as aquatics, conditioning, and archery);
- (13) Science, including at least one course in each of the following areas: biological sciences, chemistry, geosciences, and physics; and
- (14) Social Science, including at least one course in each of the following areas: United States history, California history, world history, geography, and United States government.
- (d) Home Economics Supplementary Authorizations must include a laboratory component in one of the listed subject areas. The course of study must cover both subject areas of food and nutrition but a single course may be used to meet the requirement. The course of study must cover both subject areas of family life and parenting, but a single course may be used to meet the requirement.
- (e) Science Supplementary Authorizations Authorized by 80057.5((c)13) shall include a one-year sequence of courses in at least two of the listed subject areas. At least one course must include a laboratory component.
- (f) ~~A subject specified in subsection (c) and listed on a teaching credential specified in Education Code Section 44256(b) as a supplementary authorization shall authorize the teaching of courses related to that subject in departmentalized classes in grades 9 and below.~~ The course of study for the Computer Science Supplementary Authorization authorized by 80057.5(c)(4) must include coursework aligned with the following definitions:
- (1) Computational thinking— includes solving problems and designing systems, using fundamental computing concepts such as decomposition, data representation, generalization/abstraction, and algorithms.
 - (2) Computing practice and programming—includes expertise in at least one block-based, visual (drag-and-drop) programming language, or a modern, high-level programming language.
 - (3) Computer and communications devices—covers the major components and functions of digital devices and the computing systems they compose.
 - (4) Impacts of computing: including the social, ethical, and legal issues and impacts of computing, as well as the contributions of computer science to current and future innovations in sciences, humanities, the arts, and commerce. These topics may be included within any of the courses covering content areas (f)(1) through (f)(3).
- (g) ~~Applicants who are progressing toward completion of supplementary authorization requirements as they existed on July 1, 1996, shall have until July 1, 1998, to apply for said authorizations.~~ A subject specified in subsection (c) and listed on a teaching credential specified in Education Code Section 44256(b) as a supplementary authorization shall authorize the teaching of courses related to that subject in departmentalized classes in grades 9 and below.

(h) Applicants progressing toward completion of requirements for the Supplementary Authorization in Computer Concepts and Applications must complete the required coursework and submit an application for this supplementary authorization no later than April 1, 2016. After that date, applicants must complete coursework for the Supplementary Authorization in Computer Science that meets the definitions listed in (f)(1) through (f)(4).

Note: Authority cited: Section 44225(b), Education Code. Reference: Section 44256(b), Education Code.

§80089. Adding Supplementary Authorizations to Teaching Credentials Used Predominantly in Secondary Schools.

(a) The holder of a valid teaching credential specified in Education Code Section 44256(a) may have one or more of the subjects listed in Sections 80089.1 and 80089.2, added as a supplementary authorization. The candidate or an approved institution shall verify completion of either (1) or (2) below:

- (1) 20 semester hours or 10 upper division semester hours of non-remedial collegiate coursework in a subject listed in Sections 80089.1 or 80089.2,
or
- (2) a collegiate major in a subject directly related to each subject listed in Sections 80089.1 or 80089.2. A "C" grade or above in any course used to meet provisions of this section shall be required. Non-remedial coursework for the purposes of this section shall be defined as coursework that is applicable to a bachelor's degree or a higher degree at a regionally accredited college or university.

(b) Authorization.

- (1) A supplementary authorization added under the provisions of Section 80089.1 authorizes the holder to teach that subject at any grade level; preschool, kindergarten, grades 1-12, or in classes organized primarily for adults;
- (2) A supplementary authorization added under the provisions of Section 80089.2 authorizes the holder to teach at any grade level (preschool, kindergarten, grades 1-12, or in classes organized primarily for adults) only the subject matter content typically included for that subject in curriculum guidelines and textbooks for study in grades 9 and below.

~~(c) Applicants who are progressing toward completion of supplementary authorization requirements as they existed on July 1, 1996, shall have until July 1, 1998, to apply for said authorizations.~~

Note: Authority cited: Section 44225, Education Code. Reference: Sections 44256 and 44349, Education Code.

§80089.1. Subjects Added as Supplementary Authorizations (Specific Subjects).

(a) The following listed subjects may be added as supplementary authorizations to a valid

teaching credential specified in Education Code Section 44256(a):

Accounting (including Finance)	Geography
Agricultural Mechanics	Geosciences
Animal Science	Graphic Arts
Anthropology	Industrial Crafts and Plastics
Auto Mechanics	Instrumental Music
Biological Sciences	Interior Design (Home Economics)
Chemistry	Journalism
Child Development (Home Economics)	Literature
Clothing and Textiles (Home Economics)	Marketing/Entrepreneurship
Comparative Political Systems and International Relations	Metals (Industrial Arts)
Computer Concepts and Applications	Metals (Industrial Arts)
<u>Science</u>	Office Technologies including Word Processing and Business Communications
Consumer Education (Home Economics)	Ornamental Horticulture
Crafts, including Jewelry and Ceramics (Art)	Painting and Drawing
Dance	Photography
Drafting	Physics
Drama	Plant Science
Economics	Plastics (Industrial Arts)
Economic and Consumer Education	Psychology
Electronics	Sociology
English Composition	Speech
Family Life and Parenting (Home Economics)	US Government and US Civics
Family Life Education including Drug, Alcohol and Tobacco Use Prevention (Health Science)	US History and California History
Food and Nutrition (Home Economics)	Vocal Music
Forestry and Horticulture	Woods (Industrial Arts)
	World History

- (b) A supplementary authorization in a specific subject of Science may be added to a valid teaching credential specified in Education Code Section 44256(a). The course of study for Biological Sciences or Chemistry or Geosciences or Physics must include each of the components for that area. One of the courses must include a laboratory component.
- (1) Biological Sciences, including: Molecular and Cellular Biology, Biology of Organisms, and Evolution.
 - (2) Chemistry, including: Structure and Stability, and Chemical Reactions.
 - (3) Geosciences, including: Astronomy, Geology, Meteorology and Oceanography.

- (4) Physics, including: Energy - Mechanics, Energy - Heat Energy - Electricity and Magnetism, Wave Motion and Atomic and Nuclear Physics
- (c) A supplementary authorization in each of the specific subjects of Child development (home economics), Clothing and textiles (home economics), Food and nutrition (home economics), and Interior design (home economics) must include a laboratory component.
- (d) A supplementary authorization in the subject of Family life education including drug, alcohol, and tobacco use prevention (health science) must include the following components: sexually transmitted disease including HIV/AIDS, human development and human sexuality, parenting education, violence prevention, and drug, alcohol and tobacco use, prevention and cessation.
- (e) A supplementary authorization in the specific subject of Computer Science may be added to a valid teaching credential specified in Education Code Section 44256(a). The course of study must include coursework covering the following components:
- (1) Computer Programming: including expertise in at least one modern, high-level programming language;
 - (2) Data structures and algorithms: data representation, abstraction, searching and sorting in the context of solving problems using programming and computational tools;
 - (3) Digital devices, systems and networks: covers devices and the systems they compose, including the concepts and abstractions that enable stand-alone, networked, and mobile digital devices to operate and communicate;
 - (4) Software design: the process of planning, engineering and implementing a software system to solve a problem, typically using both a design and a programming methodology. Programming methodologies that facilitate design include object-oriented and functional approaches; and
 - (5) Impacts of computing: including the social, ethical, and legal issues and impacts of computing, as well as the contributions of computer science to current and future innovations in sciences, humanities, the arts, and commerce. These topics may be included within any of the courses covering content areas (e)(1) through (e)(4).
- (f) Applicants progressing toward completion of requirements for the Supplementary Authorization in Computer Concepts and Applications must complete the required coursework and submit an application for this supplementary authorization no later than April 1, 2016. After that date, applicants must complete coursework for the Supplementary Authorization in Computer Science that meets the definitions listed in (e)(1) through (e)(5).

Note: Authority cited: Section 44225, Education Code. Reference: Sections 44256 and 44349, Education Code.

§80089.2. Subjects Added as Introductory Supplementary Authorizations.

- (a) Candidates seeking supplementary authorization in any language other than English shall, in addition to the requirements specified in Section 80089, submit verification of having either (1), (2), (3), or (4) below:

- (1) ~~passed the oral language portion of the Bilingual Certificate of Competence Examination in the language to be listed on the credential. Such verification shall be in the form of a letter from any institution or other educational agency, approved by the Commission as an assessor agency for the Bilingual Certificate of Competence. Whenever a written assessment instrument for a language other than Spanish is not available, a panel may be used by assessor agencies to assess a candidate's knowledge of the target language competencies, in accordance with Commission guidelines regulating assessment for languages other than Spanish,~~ passed the Language and Communication/Listening and Oral Communication section (Test II or III depending on the specific language) of the CSET: World Languages Examinations in the target language verified by an official score report. Passing examination scores are valid for certification use for five years from the individual test date; or
 - (2) ~~passed the speaking and listening sections of Test 6 of the Crosscultural Language and Academic Development/Bilingual Crosscultural Language and Academic Development (CLAD/BCLAD) Examinations described in Section 80015.3 in the language to be listed on the credential if no CSET: World Languages Examination is available in the target language,~~ evidence of having passed an assessment performed by an approved organization covering the integrated communication skills of listening, speaking, reading and writing in the target language; or
 - (3) ~~oral proficiency in the language to be listed on the credential at a level equivalent to that of a person with a bachelor's degree with a major in that language. This level of proficiency shall be verified by a letter from the Chair of the Language Department of a regionally accredited 4 year college or university~~ possession of a three-year or higher degree from a foreign institution in which all instruction was delivered in the target language. The foreign institution must be equivalent in status to a regionally-accredited institution of higher education in the United States; or
 - (4) ~~oral proficiency in the language to be listed on the credential at the level required to complete a Bilingual Emphasis or Bilingual Crosscultural Language and Academic Development (BCLAD) Emphasis Credential Program as verified by a letter from a person authorized to issue such verification by the college or university that offers such a program~~ passed an assessment covering the integrated communication skills of listening, speaking, reading and writing administered by a California college or university as a part of its Commission-approved bilingual authorization program in the target language.
- (b) The following listed subjects may be added as introductory supplementary authorizations to a valid teaching credential specified in Education Code Section 44256(a).
- (1) Introductory Agriculture, including at least one course in each of the following areas: animal science, plant science, and agricultural mechanics;
 - (2) Introductory Art, including at least one course in each of the following areas: drawing and painting, art history or appreciation, and crafts;
 - (3) Introductory Business, including at least one course in each of the following areas: business management, business marketing or introduction to business, computer concepts and applications, economics, business communications or business English, and accounting;

- (4) Introductory English, including at least one course in each of the following areas: composition, literature, and grammar or language structure;
- (5) Introductory Language Other Than English (Specify), including at least one course in the language covering each of the following areas: grammar, composition, conversation, and literature;
- (6) Introductory Health Sciences, including at least one course in each of the following areas: substance abuse (including alcohol, drug, and tobacco), family life education (including human sexuality, HIV/AIDS, and sexually transmitted diseases), nutrition, comprehensive school health systems or programs, and health education theory, behavior, or foundations;
- (7) Introductory Home Economics, including at least one course in each of the following areas: food and nutrition, clothing, child development, and family life and parenting;
- (8) Introductory Industrial Arts, including at least one course in each of the following areas: drafting or graphic arts, woods or metals, and electricity or electronics;
- (9) Introductory Mathematics, including at least one course in each of the following areas (all course work shall be at least at a level for which intermediate algebra is a prerequisite): college algebra, geometry, and development of the real number system or introduction to mathematics; or three courses in calculus or other mathematics courses for which algebra and geometry are prerequisites;
- (10) Introductory Music, including at least one course in each of the following areas: vocal music, instrumental music, music history or appreciation, and music theory;
- (11) Introductory Physical Education, including at least one course in each of the following areas: team sports and games; fundamental and creative movement skills (such as dance and gymnastics); human movement, motor development, and/or motor learning; and individual, dual, nontraditional and global sports and games (such as aquatics, conditioning, and archery);
- (12) Introductory Science, including at least one course in each of the following areas: biological sciences, chemistry, geosciences, and physics; and
- (13) Introductory Social Science, including at least one course in each of the following areas: United States history, California history, world history, geography, and United States government.
- (14) Introductory Computer Science, including at least one course in each of the following areas: computational thinking, computing practice and programming, computer and communications devices, and the impacts of computing. The course of study must cover all content areas but impacts of computing may be met within a single course also used to meet one of the other required content areas.

- (c) Introductory Home Economics Supplementary Authorizations must include a laboratory component in one of the listed subject areas. The course of study must cover both subject areas of food and nutrition but a single course may be used to meet the requirement. The course of study must cover both subject areas of family life and parenting, but a single course may be used to meet the requirement.

- (d) Introductory Science Supplementary Authorizations Authorized by 80089.2(b)(12) shall include a one year sequence of courses in at least two of the listed subject areas. At least one course must include a laboratory component.
- (e) The course of study for the Introductory Computer Science Supplementary Authorization must include coursework aligned with the following definitions:
- (1) Computational thinking— includes solving problems and designing systems, using fundamental computing concepts such as decomposition, data representation, generalization/abstraction, and algorithms.
 - (2) Computing practice and programming—includes expertise in at least one block-based, visual (drag-and-drop) programming language, or a modern, high-level programming language.
 - (3) Computer and communications devices—covers the major components and functions of digital devices and the computing systems they compose.
 - (4) Impacts of computing: including the social, ethical, and legal issues and impacts of computing, as well as the contributions of computer science to current and future innovations in sciences, humanities, the arts, and commerce. These topics may be included within any of the courses covering content areas (e)(1) through (e)(3).
- (f) Applicants progressing toward completion of requirements for the Supplementary Authorization in Computer Concepts and Applications must complete the required coursework and submit an application for this supplementary authorization no later than April 1, 2016. After that date, applicants must complete coursework for the Supplementary Authorization in Computer Science that meets the definitions listed in (e)(1) through (e)(4).

Note: Authority cited: Section 44225, Education Code. Reference: Sections 44256 and 44349, Education Code.