

**COMMISSION ON TEACHER CREDENTIALING**

1900 Capitol Avenue  
Sacramento, California 95814-4213  
(916) 445-0184 Web Site: <http://www.ctc.ca.gov>  
E-Mail: [credentials@ctc.ca.gov](mailto:credentials@ctc.ca.gov)



OFFICE OF THE EXECUTIVE DIRECTOR

02-0024

DATE: October 18, 2002

TO: All Individuals and Groups Interested in the Activities of the Commission on Teacher Credentialing

FROM: Sam W. Swofford, Ed.D.  
Executive Director

SUBJECT: Proposed Addition of Sections 80416, 80416.1, and 80416.2 of Title 5, California Code of Regulations, Pertaining to Single Subject Teaching Credentials in Science (Specialized) and in Foundational-Level Mathematics

**Notice of Public Hearing is Hereby Given:**

In accordance with Commission policy, proposed Title 5 Regulations are being distributed prior to the public hearing. A copy of the proposed regulations is attached. These proposed regulations are additions rather than amendments to the Code of Regulations, and all text is new. The public hearing is scheduled for:

December 5, 2002

10:00 a.m.

California Commission on Teacher Credentialing

1900 Capitol Avenue

Sacramento, California 95814

**Statement of Reasons**

One of the requirements needed to obtain a Single Subject Teaching Credential is verification of subject matter competency. Currently there are sixteen subject matter areas: Agriculture, Art, Business, English, Foreign Languages, Home Economics, Health Science, Industrial and Technology Education, Mathematics, Music, Physical Education, Science: Biological Sciences, Science: Chemistry, Science: Geosciences, Science: Physics, and Social Science. The proposed addition of Sections 80416, 80416.1, and 80416.2 to the Title 5 Regulations would increase the number of subject matter areas to twenty-one by adding Foundational-Level Mathematics and four new areas in science: Biological Sciences (Specialized), Chemistry (Specialized), Physics (Specialized), and Geosciences (Specialized). The current mathematics and science authorizations will remain available to credential candidates.

The addition of the subject matter areas in Science (Specialized) and in Foundational-Level Mathematics for Single Subject Teaching Credentials is being proposed as a potential means of increasing the number of newly credentialed science and mathematics teachers for California public schools. The proposed Science (Specialized) authorization would allow instruction in a specific science area (biology, chemistry, physics, or geosciences) in California public schools but would not authorize instruction in general or integrated science. The proposed Foundational-Level Mathematics authorization would permit the holder to teach the content areas taught to the vast majority of K-12 math students: general mathematics, algebra, geometry, probability and statistics, and consumer mathematics. It is anticipated that the adoption of these two proposed subject matter areas will attract knowledgeable and experienced individuals, including engineers, environmentalists and others, to investigate a second career in teaching.

Over the years, California has often experienced a need for credentialed teachers in mathematics and science. Recently, this has become much more apparent with the consistently low number of teacher candidates majoring in mathematics and science at California campuses and the growth of the K-12 student population. The proposed Title 5 regulations establishing the Single Subject Teaching Credentials in Science (Specialized) and in Foundational-Level Mathematics provides a partial solution to the under-supply of qualified teachers in these two areas. A disproportionate number of teachers in the fields of mathematics and science are employed based on emergency permits or waivers. In the 2000-2001 school year, there were approximately 16,700 mathematics teachers in California's public schools. Nearly 14% (almost 2,200) were teaching with emergency permits or waivers. In stark contrast, only 704 teachers during that same year were issued Single Subject Teaching Credentials in mathematics based on a California institution recommendation or completion of a credential program outside of California. In that same year there were close to 13,300 teachers teaching science. Of those teachers, over 2,800 were teaching science with an emergency permit or waiver. In comparison, during 2000-2001, less than 1000 individuals received science certification through California institutional recommendations and out-of-state programs.

As part of the task of reviewing the new K-12 Student Academic Content Standards, the Commission charged its Subject Matter Advisory Panels in Science and Mathematics with exploring possible changes in the existing single subject credential structures that might encourage more individuals to obtain science and mathematics certification. The panel members, who are practicing science and mathematics teachers, faculty members and other California educators, proposed the addition of the Science (Specialized) and Foundational-Level Mathematics subject matter areas with the hope of attracting an untapped pool of candidates. Their proposals were made based on the provision that individuals seeking certification in these new areas would need to complete all other requirements for the Single Subject Teaching Credential, including a baccalaureate degree, an appropriate teacher preparation program, the California Basic Educational Skills Test (CBEST), and personal and professional fitness verification.

The rationale and the benefits for the addition of these each sections are addressed below.

*§80416. Subject Matter Knowledge for Single Subject Teaching Credentials in Science (Specialized) and Foundational-Level Mathematics:*

The addition of this section establishes that, as with all other subject matter areas, the subject matter will be based on standards of program quality and effectiveness and aligned with the current K-12 student standards. This will guarantee that the high level of content quality expected of California teachers will be maintained.

*§80416.1. Single Subject Teaching Credential in Science (Specialized)*

The proposed Section 80416.1 establishes the specific science subject matter areas that will be available to Single Subject Teaching Credential candidates. Under this new structure, the specific sciences will be biological sciences, chemistry, physics, and geosciences. The section also stipulates that the authorization for these subject matter areas will be limited to the specific science area requested. Because of the holder's specialized scientific knowledge, none of these science areas will authorize the individual to teach general or integrated science. The authorization is for service in grades preschool, kindergarten through twelfth, and in classes organized for adults. This grade range is consistent with that authorized by Single Subject Teaching Credentials in all other subject matter areas.

This proposed regulation also details three options that may be used to satisfy the subject matter competency. The first of these options is completion of a post-baccalaureate degree from a regionally accredited institution. This will need to be in either the requested science area or in a closely related area considered equivalent by the Commission. Under the second option, candidates may verify their subject matter competency in the specialized science by passing a Commission-approved examination. The third option allows a prospective teacher with a bachelor's degree in the science requested and 30 semester units of postgraduate work in the same area, or closely related area, to meet the subject matter requirement for a Single Subject Teaching Credential.

Establishing this specialized science authorization would provide additional flexibility for those considering a career as a science teacher. These options are especially well suited to candidates who have already demonstrated their subject matter knowledge through advanced programs or training in a specific scientific field and decide, as career-changers, to enter the teaching profession. Additionally, this proposal will have the potential to increase the number of science teachers and provide staffing options for districts and schools who currently have difficulty finding credentialed teachers. This will be especially helpful for district recruiters who are seeking teachers for advanced and Advanced Placement (AP) science courses to replace the baby-boomer population of teachers who will soon be retiring.

*§80416.2. Single Subject Teaching Credential in Foundational-Level Mathematics*

This proposed section would allow Single Subject Teaching Credential candidates to verify subject matter competence in the area of Foundational-Level Mathematics. These candidates would have the option of satisfying competency in this subject matter area either by completing a Commission-approved subject matter program or by passing an appropriate

Commission-approved subject matter examination. The content knowledge verified by either of these two options, as stipulated in the proposed §80416, is derived from and aligned with the current K-12 student standards, focusing on the fields of mathematics to be authorized by this subject matter area. The knowledge needed in these specific fields of mathematics is equivalent in depth and rigor to that required in these fields for the current Mathematics subject matter area. Because of this, individuals verifying competency in Foundational-Level Mathematics will be fully prepared in these specific fields. Unlike the current Mathematics subject matter area and as reflected in the authorization for this proposal, the individual seeking certification in Foundational-Level Mathematics will not be required to verify in-depth knowledge of advanced mathematics nor will they be authorized to teach in these fields.

The subject matter area in Foundational-Level Mathematics is proposed as a measure to help alleviate some of the teacher shortage in mathematics by attracting more individuals into this area. When the Subject Matter Advisory Panel in Mathematics initially investigated the difficulties facing California school districts, the points that impacted their decision to recommend a Foundational-Level Mathematics authorization were the high percentage of teachers functioning on emergency permits and the low number of candidates qualifying for the Single Subject Teaching Credential in Mathematics. They also considered the rising need for mathematics teachers, not only to replace those leaving through attrition but also to staff new classes resulting from increases in the student population and class-size reduction. Another issue that they considered was the fields of mathematics predominantly taught to California students. In the 1999-2000 school year, more than 97% of high school mathematics students were enrolled in classes that covered fields in mathematics that were below calculus or other advanced level coursework. When the panel considered a two-tiered mathematics authorization, they, along with the Commission, sought further information regarding the likelihood of any benefits that this credential structure might have. Based on their advice, a study was conducted, surveying district human resource directors, middle and high school principals, middle and high school mathematics teachers, mathematics faculty, and mathematics education faculty at institutions with approved mathematics programs. The majority of responses supported this concept and affirmed the respondents' belief that a two-tiered mathematics credential would increase the potential pool of mathematics teachers available for the basic mathematics courses.

This proposed section of the regulation would specify the fields in mathematics that the holder of a Single Subject Teaching Credential in Foundational-Level Mathematics would be authorized to teach: general mathematics, algebra, geometry, probability and statistics, and consumer mathematics. Individuals will not be authorized to teach any of these fields if students receive advanced placement credit for the course or to teach courses in any more advanced fields of mathematics. Additionally, as with the Science (Specialized) authorization, this proposed regulation re-emphasizes that holders of the Foundational-Level Mathematics authorization may teach this in any grades in which the subject or subjects will be taught, to include preschool, grades kindergarten, grades one through twelve, inclusive, and classes organized primarily for adults.

---

### **Reports Relied Upon in Preparing Regulations**

The following reports were relied upon in preparing the proposed Title 5 additions:

- 1998-99 Annual Report: Emergency Permits and Credential Waivers, Commission on Teacher Credentialing
- 2000-01 Annual Report: Emergency Permits and Credential Waivers, Commission on Teacher Credentialing
- Characteristics and Performance of Advanced Placement Classes in California, June 2001
- Enrollment in California Public Schools, 1993-2002
- Estimated Number of Teacher Hires During 2002-03 by Subject Area, October 2001
- Mathematics Framework for California Public Schools, 1999 (This includes the Mathematics Content Standards for California Public Schools)
- Preparation of Secondary School Mathematics Teachers in the California State University, March 2002
- Proposed Exploration for the Restructuring of the Single Subject Credential for Mathematics Teachers, 2001
- Science Content Standards for California Public Schools, 1998
- Statewide Course Enrollment and Staffing Data, 1999-2000
- Statewide Course Enrollment and Staffing Data, 2000-2001
- Teacher Supply in California: A Report to the Legislature (Fourth Annual Report, 2000-01)
- Teachers Meeting Standards for Professional Certification in California: Second Annual Report 1998-99
- Teachers Meeting Standards for Professional Certification in California: Third Annual Report, 1999-00

### **Documents Incorporated by Reference**

None.

### **Office of Administrative Law's Identification Number**

The Office of Administrative Law's identification number for this proposal is Z-02-1008-12.

### **Written Comment Period and Submission of Written Comments**

Any interested person, or his or her authorized representative, may submit written comments by fax, through the mail, or by e-mail on the proposed actions. The written comment period closes at 5:00 p.m. on December 4, 2002. Comments must be received by that time or may be submitted at the public hearing. You may fax your response to (916) 327-3165, mail it to the California Commission on Teacher Credentialing, Attention: Yvonne Novelli, 1900 Capitol Avenue, Sacramento, CA 95814, or submit an e-mail at <ynovelli@ctc.ca.gov>.

Any written comments received 14 days prior to the public hearing will be reproduced by the Commission's staff for each Commissioner as a courtesy to the person submitting the comments and will be included in the written agenda prepared for and presented to the full Commission at the hearing.

**Public Hearing**

Oral comments on the proposed action will be taken at the public hearing. We would appreciate 14 days advance notice in order to schedule sufficient time on the agenda for all speakers. Please contact Yvonne Novelli at (916) 323-6512 regarding this.

Any person wishing to submit written comments at the public hearing may do so. It is requested, but not required, that persons submitting such comments provide fifty copies to be distributed to the Commissioners and interested members of the public. All written statements submitted at the hearing will, however, be given full consideration regardless of the number of copies submitted.

**Modification of Proposed Actions**

If the Commission proposes to modify the actions hereby proposed, the modifications (other than non-substantial or solely grammatical modifications) will be made available for public comment for at least 15 days before they are adopted.

**Availability of Final Statement of Reasons**

The Final Statement of Reasons is submitted to the Office of Administrative Law as part of the final rulemaking package, after the public hearing. When it is available, it will be placed on the Commission's web-site at <<http://www.ctc.ca.gov>> or you may obtain a copy by contacting Yvonne Novelli at (916) 323-6512.

**Contact Person/Further Information**

Inquiries concerning the proposed action may be directed to Yvonne Novelli at (916) 323-6512 or to Dr. Philip A. Fitch at (916) 324-3054. They will respond to questions concerning the substance of the proposed regulations. Upon request, a copy of the express terms of the proposed action and a copy of the initial statement of reasons will be made available. This information is also available on the Commission's web-site at <<http://www.ctc.ca.gov>>. In addition, all the information on which this proposal is based (the rulemaking file) is available at the Commission office for inspection and copying.

Attachments

---

**Division VIII of Title 5 of the California Code of Regulations****Proposed Additions of Sections 80416, 80416.1, and 80416.2,  
Pertaining to Single Subject Teaching Credentials  
in Science (Specialized) and in Foundational-Level Mathematics****INITIAL PROPOSED REGULATIONS**

**Sections 80416, 80416.1, and 80416.2 are proposed as additions to the Title 5 Regulations, and all text is new.**

**§80416. Subject Matter Knowledge for Single Subject Teaching Credentials in Science (Specialized) and Foundational-Level Mathematics**

The subject matter knowledge for the Single Subject Teaching Credential in Science (Specialized) or Foundational-Level Mathematics may be demonstrated by satisfying either an examination or a subject-matter program described in either Section 80416.1 or Section 80416.2 of Title 5 Regulations. The subject matter shall be based on standards of program quality and effectiveness and alignment with the state content and performance standards for elementary and secondary pupils.

NOTE: Authority cited: Section 44225(q), Education Code. Reference: Section 44259, Education Code.

**§80416.1. Single Subject Teaching Credential in Science (Specialized)**

- (a) The authorization for the Single Subject Teaching Credential in Science (Specialized) shall be available in biological sciences, chemistry, physics, and geosciences.
- (b) The subject matter requirement for a Single Subject Teaching Credential in Science (Specialized) shall be satisfied by one of the following:
  - (1) completion of a post-baccalaureate degree from a regionally-accredited institution in the science area requested, or in a closely related area deemed equivalent by the Commission, or
  - (2) passage of a Commission-approved examination that is aligned with the authorization for the Single Subject Teaching Credential in the science area requested, or
  - (3) completion of a baccalaureate degree and 30 semester-units or 45 quarter-units of postgraduate coursework in the science area requested, or in a closely related area deemed equivalent by the Commission. The degree and postgraduate coursework shall be from a regionally-accredited institution, and each course applicable to the science area requested shall have a grade of “B” or better, or “pass” or “credit.”
- (c) A Single Subject Teaching Credential in Science (Specialized) shall authorize the holder to teach in the specialized science area list on the credential in any grades in which the subject or subjects will be taught, to include grades twelve and below, including preschool, and in classes organized primarily for adults.

NOTE: Authority cited: Section 44225(q), Education Code. Reference: Section 44259, Education Code.

**§80416.2. Single Subject Teaching Credential in Foundational-Level Mathematics**

- (a) The subject matter requirement for a Single Subject Teaching Credential in Foundational-Level Mathematics shall be satisfied by either of the following:
- (1) passage of a Commission-approved examination that is aligned with the authorization for the Single Subject Teaching Credential in Foundational-Level Mathematics, or
  - (2) completion of a subject-matter program approved by the Commission that is aligned with the authorization for the Single Subject Teaching Credential in Foundational-Level Mathematics.
- (b) A Single Subject Teaching Credential in Foundational-Level Mathematics shall authorize the holder to teach courses in, or directly related to, general mathematics, algebra, geometry, probability and statistics, and consumer mathematics but not including courses in these areas for which advanced placement credit is granted. This authorization shall be in any grades in which the subject or subjects will be taught, to include grades twelve and below, including preschool, and in classes organized primarily for adults.

NOTE: Authority cited: Section 44225(q), Education Code. Reference: Section 44259, Education Code.



**CALIFORNIA COMMISSION ON TEACHER CREDENTIALING**

Box 944270

Sacramento, California 94244-2700

(916) 445-0184 Web Site: <http://www.ctc.ca.gov>

E-Mail: [credentials@ctc.ca.gov](mailto:credentials@ctc.ca.gov)



Attn.: *Yvonne Novelli, Program Analyst*

Title: Single Subject Teaching Credentials in Science (Specialized) and in Foundational-Level Mathematics

Section Nos.: §80416, §80416.1, and §80416.2

**Response to the Attached Title 5 Regulations**

So that the Commission on Teacher Credentialing can more clearly estimate the general field response to the attached Title 5 Regulations, please submit this response form to the Commission, attention Yvonne Novelli, at the above address or fax to her attention at (916) 327-3165. Respond by 5:00 p.m. on December 4, 2002, in order that the material can be presented at the December 5, 2002 public hearing.

- 1.  **Yes**, I agree with the proposed Title 5 Regulations. Please count me in favor of these regulations.
- 2.  **No**, I do not agree with the proposed Title 5 Regulations for the following reasons: (If additional space is needed, please use the reverse side of this sheet.)

3.  Personal opinion of the undersigned. and/or

4.  Organizational opinion representing: \_\_\_\_\_  
(Circle One) School District, County Schools, College, University, Professional Organization, Other

5.  I shall be at the public hearing, place my name on the list for making a presentation to the Commission.

6.  No, I will not make a presentation to the Commission at the public hearing.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_ Phone: \_\_\_\_\_

Employer/Organization: \_\_\_\_\_

Mailing Address: \_\_\_\_\_