

COMMISSION ON TEACHER CREDENTIALING

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OFFICE OF THE EXECUTIVE DIRECTOR

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

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

Subject: Adding a New Science Subject Area to an Existing Life Science or Physical Science Credential

The Commission on Teacher Credentialing has made major changes in the credentials for teaching science consistent with Education Code Sections 44257 and 44257.2. The subject areas of Life Science and Physical Science have been eliminated and replaced by a new credential for science containing an area of concentration in one of four areas. The four areas of concentration are Biological Sciences, Chemistry, Geosciences, and Physics. Those persons who currently hold Single Subject Teaching Credentials in Life Science or Physical Science are not affected by the change. These credentials will remain valid and the authorization of service under such credentials has not changed.

The new science credential has a broader authorization than the previous life and physical science credentials. The new science credential authorizes the holder to teach the following in grades preschool, K-12, and classes for adults:

coordinated science	introductory science
integrated science	specialized classes in the area of concentration
general science	

The new science credential authorizes teaching integrated science in grades K-12 whereby the life and physical science credentials only authorize teaching integrated science in grades 9 and below. The range of science taught in an integrated science class includes geosciences, and life and physical sciences as contained in the science frameworks developed by the California State Department of Education.

There are two ways to satisfy subject-matter competence for a Single Subject Teaching Credential:

- (a) achieve a passing score on the appropriate Single Subject Assessment for Teaching examination(s) and/or the appropriate Praxis Series Subject Assessment examination(s) **OR**
- (b) complete a Commission-approved subject-matter program and obtain verification from the authorized person in the education department of a California Institution of Higher Education (IHE) with the approved program.

Holders of Single Subject Teaching Credentials in Life Science or Physical Science will have met the subject-matter competence requirement by meeting either (a) or (b) above. These individuals have several choices if they want to expand their authorization to teach integrated science in grades 10 - 12. He or she may take the appropriate course work and qualify for a specific supplementary authorization in a science area for which they are not already authorized or may satisfy subject-matter competence in the subject area as listed in (a) or (b) to add to their current Single Subject Teaching Credential in Life Science or Physical Science.

To qualify for the supplementary authorization, individuals must complete twenty semester units or ten upper division or graduate units of course work covering component areas within the specific science subject area. The supplementary authorization for geosciences requires the individual to verify that the component areas of astronomy, geology, meteorology, and oceanography are covered in the ten or twenty semester units of course work. Each specific science supplementary authorization also requires that one course include a laboratory section.

The revised Commission-approved science subject-matter programs require a minimum of 45 semester units; the four areas of biological sciences, chemistry, geosciences, and physics constitute approximately 25 of the semester units and approximately 20 semester units are the area of concentration. The life science and physical science subject-matter programs, in contrast, focused primarily on course work within the specific area of life science or physical science. There was not a broad range of course work in general science in these programs.

The charts on the following page show the examinations used for the life science and physical science credentials and the examinations that are currently required for the new science Single Subject Teaching Credentials. There are four examinations in each new science area; two are general science examinations (covering content of biological sciences, chemistry, geosciences, and physics) and two examinations are in the concentration area of the science credential, one multiple choice and one content essay. The Geosciences multiple choice examination will be available for the 1996-97 examination year.

The previous examination structure included one multiple choice examination that primarily tested the knowledge of advanced principles in the concentration area (biology or physics and chemistry) and two content essays, one in general science and one in the area of concentration (life science or physical science).

As noted earlier, an individual may meet the subject-matter requirement by examination or completing a subject-matter program of course work for a Single Subject Teaching Credential in Life Science or Physical Science. As shown on the examination chart, the content areas tested on the examinations is different from the content area completed by the individual in a subject-matter program. The Commission must treat teachers who qualify by examination differently than those who qualify by course work when they seek to add an authorization to teach integrated science. Each may complete the appropriate course work for the supplementary authorization, or complete additional courses in a Commission-approved new science subject-matter program, or they may successfully complete

the appropriate examinations covering those subjects that were not verified as part of their Single Subject Teaching Credential in Life Science or Physical Science.

Examinations for the Life Science and Physical Science Credentials

CR - Constructed Response Examination (Content Essay) MC-Multiple Choice Examination

Subject Area	Examination	CR	MC
Life Science	<ul style="list-style-type: none"> •Biology and General Science •General Science •Life Science 	 X X	 X
Physical Science	<ul style="list-style-type: none"> •Chemistry, Physics, and General Science •General Science •Physical Science 	 X X	 X

Examinations for the New Single Subject Teaching Credentials in Science

Subject Area	Examination	CR	MC
Science: Biological Sciences	<ul style="list-style-type: none"> •General Science •Biology •Biology: Content Essay •General Science: Content Essay 	 X X	 X X
Science: Chemistry	<ul style="list-style-type: none"> •General Science •Chemistry •Chemistry: Content Essay •General Science: Content Essay 	 X X	 X X
Science: Geosciences	<ul style="list-style-type: none"> •General Science •Geosciences •General Science: Content Essay 	 X	 X X
Science: Physics	<ul style="list-style-type: none"> •General Science •Physics •Physics: Content Essay •General Science: Content Essay 	 X X	 X X

Commission Policy

The three ways life and physical science credential holders can seek to obtain the new science credential are listed below. At their February 1996 meeting, the Commission approved a policy to allow the holder of a Single Subject Teaching Credential in Life or Physical Science listed in #1 and #2 below to add a new science subject area by examination by passing the examinations listed on the enclosed chart. Holders of credentials listed in #3 must contact a California college or university with a Commission-approved program in a new science concentration areas to find if it is within the policy of the college or university to evaluate the individual's transcripts to establish equivalence to their approved program.

1. *Holders of Life or Physical Science Credentials by Examination Who Choose to Pass the Appropriate Examinations*

As shown on the examination charts, holders of Single Subject Teaching Credentials in Life Science or Physical Science who satisfied the subject-matter requirements by examination are deemed to have passed part of the content that is required in the examinations for the new science subject areas. The General Science multiple

choice and content essay examinations are the same in the old or new examination system and are completed by all applicants for the old and new science subject credential. If an individual has already passed an examination he or she will not be required to pass another examination covering the same content. For example:

The holder of a life science credential by examination who seeks to qualify for the Science: Biological Sciences credential has passed the General Science content essay, the Biological Science content essay, and the Biological Science multiple choice examinations. He or she would be required to pass only the General Science multiple choice examination which had not been passed previously.

The holder of a life science credential by examination who seeks to qualify for the Science: Chemistry credential but has passed only the General Science content essay, would need to pass the other three examinations required for the credential to demonstrate the depth and breadth of knowledge in the specific content area.

2. *Holders of Life and Physical Science Credentials Based on Completion of a Subject-Matter Program Who Choose to Pass the Appropriate Examinations*

The Commission-approved life and physical science programs concentrated on course work within the specific area of life science or physical science. There is very little general science in the programs. Individuals holding life science or physical science credentials by program would need to pass the general science examinations. For example:

The holder of a physical science credential based on completion of a subject-matter program wanting to qualify for the Science: Chemistry by examination would need to pass both general science examinations, multiple choice and content essay. Course work has already been completed in chemistry so the two content examinations would not be necessary.

The holder of a physical science credential based on completion of a subject-matter program wanting to qualify for the Science: Biological Sciences examination would be required to pass all four examinations as the program he or she completed did not require courses in the general sciences or the specific areas of biological science.

3. *Holders of Life or Physical Science Credentials by Examination or Completion of a Subject-Matter Program Who Choose to Complete the New Science Credential Subject-Matter Program*

A California college or university with a Commission-approved program in the new science concentration areas would need to evaluate each individual's transcripts to establish equivalence to their approved program and determine what additional subjects, if any, need to be completed.

If you have questions, please call our Information Services Unit at (916) 445-7256 weekday afternoons between 12:30 and 4:30.

Credential Held	Needs To Pass	To Qualify For *
Life Science Teaching Credential by Examination	Area of Concentration MC Area of Concentration CR General Science MC	Science: Chemistry (X) Science: Geosciences (X) Science: Physics (X)
Life Science Teaching Credential by Examination	General Science MC	Science: Biological Sciences (X)
Life Science Teaching Credential by Subject-Matter Program	Area of Concentration MC Area of Concentration CR General Science MC General Science CR	Science: Chemistry (X) Science: Geosciences (X) Science: Physics (X)
Life Science Teaching Credential by Subject-Matter Program	General Science MC General Science CR	Science: Biological Sciences (X)
Physical Science Teaching Credential by Examination	Biological Sciences MC Biological Sciences CR General Science MC	Science: Biological Sciences (X)
Physical Science Teaching Credential by Examination	General Science MC	Science: Chemistry (X) Science: Geosciences (X) Science: Physics (X)
Physical Science Teaching Credential by Subject-Matter Program	Biological Sciences MC Biological Sciences CR General Science MC General Science CR	Science: Biological Sciences (X)
Physical Science Teaching Credential by Subject-Matter Program	General Science MC General Science CR	Science: Chemistry (X) Science: Geosciences (X) Science: Physics (X)

* (X) after the subject area indicates the credential is based on passing the appropriate examinations

CR -Constructed Response Examination (Content Essay)

MC-Multiple Choice Examination