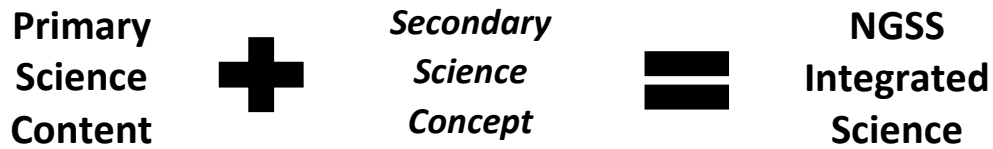


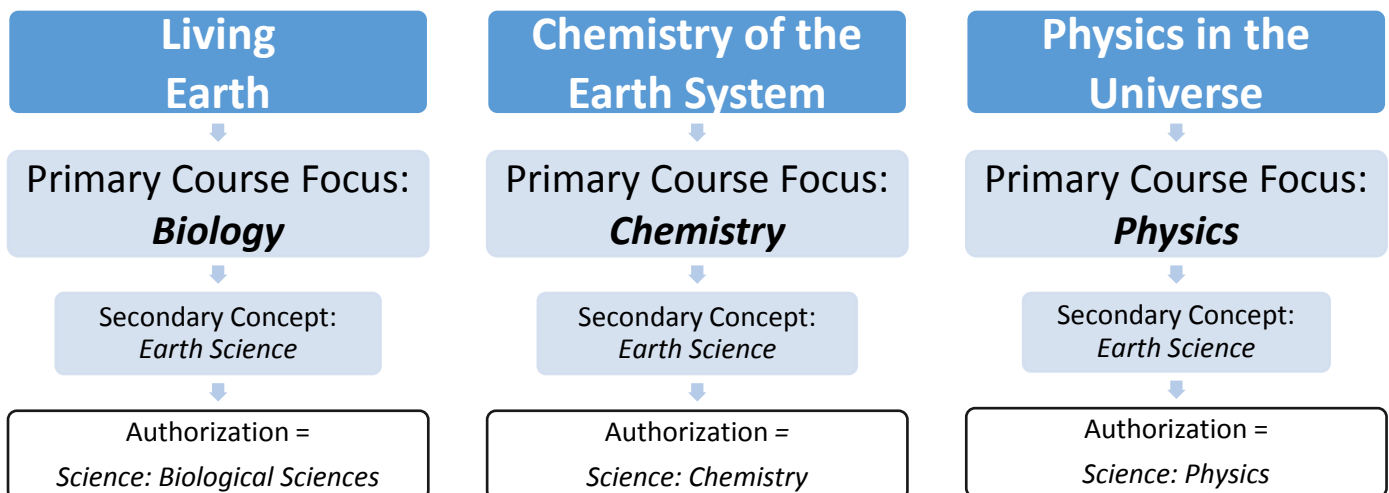
NGSS Integrated Science

Next Generation Science Standards (NGSS) give local educators the flexibility to design science courses through a new approach to integration of the sciences. Employers may design Integrated Science courses that rely on crosscutting a secondary science concept into another main science area. Crosscutting highlights connections within and among the science disciplines by providing a bridge between concepts and connecting core ideas. The Commission recognizes that this new approach to Integrated Science at the high school level may result in confusion as to whom should teach such integrated courses because each course may include more than one science area.



To identify the appropriate credential authorization, employers must first determine what the **primary science content** area is for an Integrated Science course at the high school level. The primary focus will determine the appropriate science authorization needed. The secondary science area used for the crosscutting aspect of the course is not a factor as long as it is used solely as a lens to highlight the main science concept.

The [California Science Framework](#), adopted by the State Board of Education, was created to align with NGSS and includes a [three-course model](#) for grades 9-12. This model follows the integrated science framework described above, blending the three main science areas of biology, chemistry, and physics with earth sciences serving as a crosscutting concept throughout the curriculum. The new model differs from the previous integrated science courses seen at the high school level prior to NGSS because each course has a main science content area as the focus rather than being completely integrated across multiple science concepts. This distinction means that the required authorization to teach each of these integrated science courses at the high school level must be specific to the primary science area focused on in the course, as shown in the graphic below.



The charts below shows science authorizations that may authorize the CA science framework developed based on NGSS.

The charts only include the most commonly issued science authorizations.

For a complete list of science related authorizations, see the archived [Science Authorization chart](#).

Full Science Authorizations for CA NGSS Science Curriculum

| Document Details | | Curriculum for Middle Grades | | | | Curriculum for High School Grades (Including <i>Integrated Sciences</i> in <u>Primary Content</u>) | | | |
|----------------------------|---|------------------------------|-----------------------|--------------|------------------|--|----------------|----------------|-------------------|
| Authorization | Code | Integrated Science | Earth & Space Science | Life Science | Physical Science | Biological Science | Chemistry | Physics | Earth/ Geoscience |
| Currently Issued | Science: Biological Sciences | R1S: SBS or R1S: SBSX | ✓ | ✓ | ✓ | ✓ | X | X | X |
| | Science: Chemistry | R1S: SC or R1S: SCX | ✓ | ✓ | ✓ | ✓ | X | X | X |
| | Science: Physics | R1S: SP or R1S: SPX | ✓ | ✓ | ✓ | ✓ | X | ✓ | X |
| | Science: Geosciences | R1S: SGS or R1S: SGSX | ✓ | ✓ | ✓ | ✓ | X | X | ✓ |
| | Foundation-Level General Science | R1GS: FLGS or R1GS: FLGX | ✓ | ✓ | ✓ | ✓ | X | X | X |
| No Longer Initially Issued | Life Science | R1S: LS or R1S: LSX | ✓ | X | ✓ | X | X | X | X |
| | Physical Science | R1S: PS or R1S: PSX | ✓ | ✓ | X | ✓ | X | ✓ | ✓ |
| | Biological Science ¹ (Specialized) | R1E: BSS or R1E: BSSX | X | X | X | X | ✓ ¹ | X | X |
| | Chemistry ¹ (Specialized) | R1H: CHS or R1H: CHSX | X | X | X | X | X | ✓ ¹ | X |
| | Physics ¹ (Specialized) | R1P: PHS or R1P: PHSX | X | X | X | X | X | X | ✓ ¹ |
| | Geosciences ¹ (Specialized) | R1G: GES or R1G: GESX | X | X | X | X | X | X | X |

✓ = Authorizes service in identified subject matter

X = Does not authorize service in identified subject matter

¹ Does NOT authorize the holder to teach any of the CA NGSS Integrated Science courses. The holder is authorized to teach only the indicated subject matter content.



The chart below shows additional science authorizations that may authorize the CA science framework developed based on NGSS.

Note: Introductory Subject Matter Authorizations added to Single and Multiple Subject Credentials authorize the holder to teach curriculum designed for grades 9 and below to students up to grade 12. Supplementary Authorizations added to Multiple Subject Credentials authorize the holder to teach curriculum designed for grades 9 and below to students up to grade 9.

Additional Science Authorizations for CA NGSS Science Curriculum

| Document Details | | Curriculum for Middle Grades | | | | Curriculum for High School Grades | | | | | | | | |
|---|---------------------------------|--|-----------------------|--------------|------------------|-----------------------------------|----------------------|-------------------------------|----------------------|-------------------------------|----------------------|-------------------------------|----------------------|----------------|
| Authorization | Code | Integrated Science <i>Does not include grade 10-12 curriculum</i> | Earth & Space Science | Life Science | Physical Science | Biological Science | | Chemistry | | Physics | | Earth/ Geoscience | | |
| | | | | | | Curriculum Grades 9 and Below | Any Curriculum Level | Curriculum Grades 9 and Below | Any Curriculum Level | Curriculum Grades 9 and Below | Any Curriculum Level | Curriculum Grades 9 and Below | Any Curriculum Level | |
| Supplementary & Subject Matter Authorizations | (Introductory) Science | SMAB: IS1 R1B: IS1 R2B: SCIE | ✓ | ✓ | ✓ | ✓ | ✗ | ✓ | ✗ | ✓ | ✗ | ✓ | ✗ | |
| | (Introductory) General Science | R1B: IGS R2B: GSCI | ✓ | ✓ | ✓ | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | |
| | (Introductory) Life Science | R1B: ILS R2B: LS | ✗ | ✗ | ✓ | ✗ | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | |
| | (Introductory) Physical Science | R1B: IPS R2B: PS | ✗ | ✗ | ✗ | ✓ | ✗ | ✗ | ✓ | ✗ | ✓ | ✗ | ✗ | |
| | Biological Science/ Biology | SMAA: BS R1A: BIOL or BSCI | ✗ | ✗ | ✓ | ✗ | ✓ | ✓ ¹ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ |
| | Chemistry | SMAA: CHEM R1A: CHEM | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✓ | ✓ ¹ | ✗ | ✗ | ✗ | ✗ |
| | Physics | SMAA: PHYS R1A: PHYS | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✓ | ✓ ¹ | ✗ | ✗ |
| | Geoscience/ Earth Science | SMAA: GEOS R1A: GEOS or ES | ✗ | ✓ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✗ | ✓ | ✓ ¹ |

✓ = Authorizes service in identified subject matter

✗ = Does not authorize service in identified subject matter

¹ Does NOT authorize the holder to teach any of the CA NGSS Integrated Science courses designed for High School level curriculum unless the holder also has either the Foundation- Level General Science authorization or another full broad science authorization.

