# Grade 4 STEAM Scope & Sequence

(Grade 4 curriculum is still being developed. This document is being revised.)

| | Unit 1<br>CS+Community | Unit 2<br>The Great CA Shakeout | Unit 3<br>Energy To Change | Unit 4<br>CS+Earth | Unit 5<br>Tenacious Tidepools |
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| **Estimated Time** | 16 - 24 hours | | 9 lessons | 16 - 24 hours | |
| **NGSS Performance Expectations** | 3-5-ETS1-1<br>3-5 ETS1-2<br>3-5 ETS1-3 | 4-ESS3-2 | 4-PS3-1<br>4-PS3-2<br>4-PS3-3<br>4-PS3-4 | 3-ESS2-1<br>3-ESS2-2<br>4-PS4-3 | 4-PS4-1<br>4-PS4-2<br>4-LS1-1<br>4-ESS3-1<br>4-ESS3-2 |
| **Computer Science Standards** | CSTA and CS Standards in CS+Community | | | CSTA and CS Standards in CS+Earth | |
| **SEP (DO) Science and Engineering Practices** | SEP1<br>SEP2<br>SEP3<br>SEP5 | SEP1<br>SEP2<br>SEP4<br>SEP6 | SEP1<br>SEP2<br>SEP3<br>SEP4<br>SEP6<br>SEP8 | SEP1<br>SEP2<br>SEP3<br>SEP4<br>SEP4<br>SEP8 | SEP6 |
| **DCI (KNOW) Disciplinary Core Ideas** | ETS1.A<br>ETS1.B<br>ETS1.C | ESS3.B<br>PS4.A<br>ETS1.B | PS3.A<br>PS3.B<br>PS3.C<br>PS3.D | ETS1.A<br>ETS1.B<br>ETS1.C | PS4.A<br>PS4.B<br>LS1.A |
| **CCC (THINK & LINK) Crosscutting Concepts** | CCC1<br>CCC2 | CCC2<br>CCC5 | CCC2<br>CCC4<br>CCC5 | CCC1<br>CCC2<br>CCC3 | CCC4 |

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| **Anchor Phenomenon** | Apps and computer programs are always updating. | A 10-story wood building designed on a shake table doesn't fall. (10-story wood building passes earthquake test)<br> | Energy is transferred and transformed through different parts of a chain reaction machine. (OK GO Chain Reaction Machine)<br> | Computer models represent what we see on earth. | A tidepool is a unique and constantly changing environment that is home to a diverse species of plants and animals. |
| **Essential Question** | How can I use computer science to share what's important to me? | What can we do to reduce the impacts of an earthquake? | How can we use energy to solve problems? | How can we model earth systems using computer science? | Why should we protect tidepools? |
| **Final Product** | Share a Scratch Project About Your Interests and How They Connect to Computer Science | Design and test an earthquake safe building. | Rube Goldberg Community Chain Reaction | Scratch Game for an Audience | Students create a community guide to learn about and protect the tidepools. |
| ***Ethnic Studies: 5Ss and 7Cs** | Stories<br>Celebrate<br>Center<br>Connect | Self<br>Stories<br>Center<br>Critique<br>Cultivate | Systems<br>Critique | Systems<br>Connect | Systems<br>Connect |
| **Math** | Make sense of problems and persevere in solving them. Look for and express regularity in repeated reasoning. | | 4.MD.B.4 | | |
| **VAPA** | Visual Arts<br>2.0 Creative Expression<br>5.0 Connections, Relationships, Applications | | Visual Arts<br>5.0 Connections, Relationships, Applications | Visual Arts<br>2.0 Creative Expression<br>5.0 Connections, Relationships, Applications | |

| | Theatre<br>2.0 Creative Expression | | | | |
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| **Community Connection** | School community | CA Shakeout Community<br>School Community<br>UCSD Shake Table Visit | Energy Innovation Center<br><br>Students bring their ideas out to the community to prototype and test. | | Local tidepools |
| **Career Connection** | Computer Scientist (Computer Science connection to ALL careers) | Seismologist<br>Building engineer<br>Geologist | Rollercoaster Engineers<br>Automotive Safety Engineer<br>Musician<br>Artist<br>Activist | Computer Scientist (Computer Science connection to ALL careers) | State Park Interpreter<br>Naturalist<br>Marine Biologist |
| **Community Partners** | UCSD | UCSD | Energy Coalition | UCSD | Cabrillo National Monument<br>Birch Aquarium |
| **Engineering/ Design Thinking** | Design coding projects for your community. | Students learn how to prepare for earthquakes and design a solution in response to a natural disaster. | Design a Rube Goldberg Chain Reaction Machine.<br><br>Create a Community Chain Reaction by using your energy to solve a problem in the community. | Design a game for your community. | Design a wave simulation of the tidepool environment.<br><br>Design a model of a tidepool animal internal/external structure. |
| **Exhibition** | Share Coding projects. | Share their solutions to reduce the impacts of earthquakes and tsunamis with the community.. | Students share their change ideas to an authentic audience and their learning about the project in an Exhibition of Learning. | Share games | Students become Tidepool Interpreters at their local tidepool and share their guide. |
| **Authentic Audience** | Family and School Community | School Community | Family and Classroom Community | Classroom Community | Local Community |

*Ethnic Studies 5S's: Stories, Self, Systems, Solidarity, Social Movements
7C's: Cultivate, Celebrate, Center, Critique, Challenge, Connect, Conceptualize

HSS:
Students explain the economic, social, and political life in California from the establishment of the Bear Flag Republic through the Mexican-American War, the Gold Rush, and the granting of statehood.

Analyze the effects of the Gold Rush on settlements, daily life, politics, and the physical environment (e.g., using biographies of John Sutter, Mariano Guadalupe Vallejo, Louise Clapp).