RIALTO UNIFIED SCHOOL DISTRICT
CURRICULUM PROPOSAL

Name of Course: Environmental Science Forensics	Grade Level(s): 7-8

Brief Course Description:

This elective course will help students hone their investigative skills and review a wide range of science concepts. Students will review the disciplinary core ideas in physical, life, earth and space science as well as engineering and the environmental principles and concepts utilizing technology and mathematics in the process of learning about environmental forensics.

Proposed By:	Vince Rollins	School:	Frisbie Middle School	Date:	December 3, 2019

The Following is Proposed for this Course:

☒	Addition	☐	Revision	☐	A – G	☐	Deletion
☐	Required Course	☐	Content	☐	Honors	☐	Name of Course
☒	Elective	☐	Name Change	☐	Vocational		

The Following *Maximum* Credits are Proposed for this Course:

Units of Credit in (Subject Area): Semester or in: Elective

The Following Schools will Offer this Course:

☒ Frisbie Middle	☐ Jehue Middle	☐ Kolb Middle	☐ Kucera Middle	☐ Rialto Middle

The Proposed Course will have the Following Budget Implication:

Individual School Site:	
District Level:	
Total Estimated Cost:	

Approval Signatures for the Proposed Course:

Printed Name	Signature	Title	Yes/No	Date
Anne Boshoven	ARWhittaker	Submitting School Department Chair	☒ Yes ☐ No	11-27-19
Vince Rollins		Frisbie Middle School Principal	☒ Yes ☐ No	11-27-19
		Jehue Middle School Principal	☐ Yes ☐ No	
		Kolb Middle School Principal	☐ Yes ☐ No	
		Kucera Middle School Principal	☐ Yes ☐ No	
		Rialto Middle School Principal	☐ Yes ☐ No	
Ed D'Souza		District Curriculum Committee Chair	☒ Yes ☐ No	11-27-19
P. Chavez		Curriculum Council Chair	☐ Yes ☐ No	12-3-19

Approved by Ed D'Souza Curriculum Committee on (Date): 11/27/19
Approved by Curriculum Council on (Date):
Approved by Rialto Unified School Board on (Date):
Approved by UC (or N/A) on (Date):

Course: Environmental Science Forensics
Transcript Title: ZEnvFor
School:
Subject Area: STEM Elective (Middle School)
Grade Level: 7[t] & 8

Brief Course Description: This elective course will help students hone their investigative skills and review a wide range of science concepts. Students will review the disciplinary core ideas in physical, life, earth and space science as well as engineering and the environmental principles and concepts utilizing technology and mathematics in the process of learning about environmental forensics.

Units of Study: The course consists of two main units. The first unit is an environmental mystery where students learn the skills to become an Environmental Detective. The 2nd unit involves contamination of ground water which was developed as a unit of study as part of the Rialto Integrating Science, Math and Related Technologies (RiSMART) project that was funded by the California Department of Education CAMSP grant.

Course Goals:

(1) Students learn how to grapple with a complex interdisciplinary scientific investigation and work in cooperative groups to break down the problem to smaller parts
(2) Students learn to use and discuss primary reference materials as part of their research process
(3) Students use a variety of technology to collect and analyze their data
(4) Students analyze their data and using various statistical techniques to develop a model for their solution
(5) Students will learn how to make evidence-based statements supported by quantitative reasoning.
(6) Groups present their findings for each unit of study.

Course Outline

Unit 1: The Gray Area

The "scene of the crime" is a watershed that includes forests, a city and town, a coast, three rivers, a lake and a pond. The "crime" is a fish die-off that began five years ago. Students learn about the possible causes of the fish die-off; they learn how much "gray area" there is and how difficult it can be to pinpoint the exact cause of an environmental problem. They become aware of the interconnectedness of the natural world and of environmental problems and see how one small change can trigger a whole chain of events. Students learn how science and society are inextricably linked, and that most solutions require compromise. They discover that environmental problems are not only caused by "big bad companies" but also by the general public including themselves. Each activity in this unit has students observing and discussing minute differences between two different scenes. Students read and analyze text and "crime scene pictures" to determine "who-done-it", they learn to gather and analyze fingerprints, handwriting samples, DNA fingerprinting, examine mystery powders and shoe prints, and analyze stains using chromatography. Each activity concludes with an opportunity for students to reflect, to write in their Environmental Detective notebook and to make predictions or adjust previous predictions on the class Suspect Chart.

Students will be broken into cooperative learning groups and each group will present an analysis of their findings either on a poster or a PowerPoint at the end of this unit.

Unit 2: Contamination

Students will learn about aquifer contamination by exploring topics such as: aquifers, how groundwater is used by communities, implications of pollution, how to read consumer water quality reports (in their local water bill), water sampling, water treatment and legislation. They will examine data from a number of thyroid cases and determine whether there is enough evidence to connect these incidents to toxic chemicals found in a single ground water well that was under an industrial site. Were the chemicals linked to thyroid problems? Can the well ever be opened again? Students will extend their learning about how microbes are used in contamination clean-up and how a local water treatment plants function.