

Newport-Mesa Unified School District
Office of Secondary Curriculum and Instruction
High School Course of Study

Course Title	<i>Intro to Environmental Studies</i>				Course Code	<i>[Office use only]</i>
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Transcript Title:		Grades Levels:	10 th	Board Adoption Date:	
Content Area:	Science/CTE	GPA Scale:	4.0	Date Course Submitted:	3/18/2011
Credential Req:		Graduation Subject Areas:	Applied Skills	Elective	
UC/CSU "A-G" Area Approvals:	G		School Site that wrote and submitted the course:	CMHS	
Prerequisite(s):	Co-enrollment in Algebra I or higher, completion of 1 year of physical or life science				
Next course(s):	Environmental Research and Technology				

COURSE DESCRIPTION (*catalog summary*): Intro to Environmental Studies is an interdisciplinary, project-based course which introduces students to the fundamentals of environmental and marine sciences through real-world projects, field work, and laboratory exploration. Students also build the foundation of their ePortfolios, explore careers, and develop critical thinking and communication skills.

GOALS (*expected performance outcomes for students*): By the end of the course students will be able to articulate clearly and accurately the fundamentals of environmental and marine science and how they apply to current world events. They will also be able to present a potential employer with their portfolio including a cover letter, resume, work sample, writing sample, job application and ten-year plan for graduation, post-secondary education/training, and employment. Students will apply their knowledge to a variety of real-world laboratory and fieldwork settings, communicating their findings with their peers and the public.

CALIFORNIA CONTENT STANDARDS (*how the course aligns with California and/or national curriculum standards*): CTE Agriculture and Natural Resources Industry Sector Standards: (Academics) Algebra I 10.0, 12.0, 13.0, 15.0. Geometry 8.0, 10.0, 11.0, 12.0. Probability and Statistics 8.0. Science Investigation and Experimentation 1a, 1c, 1d, 1f, 1j, 1l, 1m. Economics 12.2, 12.2.2, 12.2.3, 12.2.5, 12.2.6, 12.2.7, 12.2.10, 12.4, 12.4.3. (Communications) ELA Reading 9th and 10th 2.1, 2.2, 2.3, 2.6, 2.7, 2.8. ELA Reading 11th and 12th 2.1, 2.3, 2.4. ELA Writing 9th and 10th 1.1, 1.2, 1.3, 1.5, 2.3, 2.5, 2.6. ELA Writing 11th and 12th 1.3, 1.6, 1.7, 1.8, 2.5, 2.6. ELA Conventions 9th and 10th 1.1, 1.2, 1.3. ELA Listening and Speaking 9th and 10th 1.1, 1.7, 2.2, 2.3. ELA Listening and Speaking 11th and 12th 1.8, 1.14, 2.4.

Foundation standards for Career Planning and Management, Technology, Problem Solving and Critical Thinking, Health and Safety, Responsibility and Flexibility, Ethics and Legal Responsibilities, Leadership and Teamwork, Technical Knowledge and Skills, and Demonstration and Application.

CTE Standards for the Agriscience Pathway (C): 1.5, 2.0-2.5, 3.2-3.4, 4.3, 5.0-5.4, 6.0-6.2, 7.0-7.5, 10.0-10.4, 11.0-11.6, 12.0-12.3, 13.0-13.3.
 CTE Standards for the Forestry and Natural Resources Pathway (E): 1.0-1.5, 2.0-2.6, 3.0-3.5, 4.2-4.3, 5.0-5.7, 6.0-6.6, 7.1-7.2, 7.4-7.5, 8.0-8.4, 9.1-9.3, 10.1-10.4, 11.2, 11.4, 13.0-13.4.

EVALUATION (*how the effectiveness of the course will be monitored and assessed*): Students will be evaluated based on individual and group formative and summative assessments. Examples include position papers, environmental impact reports, laboratory reports, formal and informal presentations, and internship evaluations. No state assessments exist for this course at this time.

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Unit 1	Length of Unit: 4 weeks			
	Key Vocabulary	Standards (referenced)	Model Tasks	Tools / Texts
<u>Introduction</u> An Introduction to Environmental Science Economics and Environmental Policy Earth's Environmental Systems	environment environmental science natural resource renewable natural resources nonrenewable natural resources sustainable fossil fuel ecological footprint independent variable dependent variable controlled study peer review environmental ethics cost-benefit analysis ecological economics ecolabeling environmental policy environmental impact statement command-and-control approach subsidy green tax cap-and-trade lobby hydrocarbon solution macromolecule protein nucleic acid carbohydrate lipid pH feedback loop erosion geosphere lithosphere	CALIFORNIA CONTENT STANDARDS (how the course aligns with California and/or national curriculum standards): CTE Agriculture and Natural Resources Industry Sector Standards (Academics): Algebra I 10.0, 12.0, 13.0, 15.0. Geometry 8.0, 10.0, 11.0, 12.0. Probability and Statistics 8.0. Science Investigation and Experimentation 1a, 1c, 1d, 1f, 1j, 1l, 1m. Economics 12.2, 12.2.2, 12.2.3, 12.2.5, 12.2.6, 12.2.7, 12.2.10, 12.4, 12.4.3. (Communications) ELA Reading 9th and 10th 2.1, 2.2, 2.3, 2.6, 2.7, 2.8. ELA Reading 11th and 12th 2.1, 2.3, 2.4. ELA Writing 9th and 10th 1.1, 1.2, 1.3, 1.5, 2.3, 2.5, 2.6. ELA Writing 11th and 12th 1.3, 1.6, 1.7, 1.8, 2.5, 2.6. ELA Conventions 9th and 10th 1.1, 1.2, 1.3. ELA Listening and Speaking 9th and 10 th 1.1, 1.7, 2.2, 2.3. ELA Listening and Speaking 11th and 12th	Map It: Comparing Ecological Footprints Replication Validity Activity Local Pollutant Project Tragedy of the Common Simulation Green vs. Conventional Cleaners Lab Secondary Treatment Options Activity Hot Topics: Investigating Local Environmental Issues Pending Legislation: Cost Benefit Analysis Essential Nutrients Activity A Ballooning Issue	Environmental Science National Geographic SIRS Internet Microsoft Word Microsoft Excel Microsoft PowerPoint ArcGIS Google Earth PASCO Probes Microscopes Water Quality Test Kits e-Portfolio KUDER

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	biosphere atmosphere hydrosphere tectonic plate landform deposition evaporation transpiration precipitation condensation aquifer groundwater	1.8, 1.14, 2.4. Foundation standards for Career Planning and Management, Technology, Problem Solving and Critical Thinking, Health and Safety, Responsibility and Flexibility, Ethics and Legal Responsibilities, Leadership and Teamwork, Technical Knowledge and Skills, and Demonstration and Application. CTE Standards for the Agriscience Pathway (C): 1.5, 2.0-2.5, 3.2-3.4, 5.0-5.4, 7.4-7.5, 10.0-10.4, 11.0-11.6, 12.0-12.3, 13.0-13.3. CTE Standards for the Forestry and Natural Resources Pathway (E): 1.0-1.3, 2.0-2.6, 3.0-3.5, 11.2, 11.4, 13.0-13.4.		
Differentiation	Support -- for students who are struggling with the content	Content: The same as the general class Process: Extra time, scaffolding instruction, modified assignments, one-on-one help, partner work, Product: See above, in “Model Tasks” section. Products include presentations, lab reports, graphs and charts, and projects.		
	Extension – for high achieving students.	Content: Exploration of unit concepts in greater depth than is covered with the general class Process: Autonomous investigation, independent learning, modified assignments Product: See above, in “Model Tasks” section. Products include presentations, lab reports, graphs and charts, and projects.		

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Evaluation	<i>Formative Assessments (ongoing & mid-lesson):</i> Used to assess student understanding and determine whether to continue with the lesson or if re-teaching is required. Strategies may include, but are not limited to checks for understanding, quizzes, mind maps, and homework review. Benchmark tests are required for all state tested subjects.
	<i>Summative Assessments (unit final evaluation):</i> Typically used to assess student achievement at the end of units or end of course. Strategies may include, but are not limited to, chapter tests, research papers, lab reports, CST's and final exams.

Unit 2	Length of Unit: 4 to 5 weeks			
	Key Vocabulary	Standards (referenced)	Model Tasks	Tools / Texts
<u>Ecology</u> Population and Ecology Evolution and Community Ecology Biomes and Aquatic Ecosystems Biodiversity and Conservation	ecology species population community ecosystem biosphere biotic factor abiotic factor habitat population density population distribution age structure sex ratio survivorship curve immigration emigration migration exponential growth limiting factor carrying capacity logistic growth density dependent factor density independent factor biotic factor	CALIFORNIA CONTENT STANDARDS (how the course aligns with California and/or national curriculum standards): CTE Agriculture and Natural Resources Industry Sector Standards (Academics): Algebra I 10.0, 12.0, 13.0, 15.0. Geometry 8.0, 10.0, 11.0, 12.0. Probability and Statistics 8.0. Science Investigation and Experimentation 1a, 1c, 1d, 1f, 1j, 1l, 1m. Economics 12.2, 12.2.2, 12.2.3, 12.2.5, 12.2.6, 12.2.7, 12.2.10, 12.4, 12.4.3. (Communications) ELA Reading 9th and 10th 2.1, 2.2, 2.3, 2.6, 2.7, 2.8. ELA Reading 11th and 12th 2.1, 2.3, 2.4. ELA Writing 9th and 10th 1.1, 1.2, 1.3, 1.5, 2.3, 2.5, 2.6. ELA Writing 11th and 12th	Abiotic & Biotic Cluster Observations Activity Population Migration Patterns Mark and Recapture Activity Population Cycling Simulation Keystone Species Activity Point Counterpoint: Elephant Culling Zebra Mussel Invasion Convention of Biological Diversity Disrupting an Ecosystem Research Project	Environmental Science National Geographic SIRS Internet Microsoft Word Microsoft Excel Microsoft PowerPoint ArcGIS Google Earth PASCO Probes Microscopes Water Quality Test Kits e-Portfolio KUDER

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	evolution gene mutation genetic drift natural selection adaptation artificial selection extinction niche tolerance resource partitioning predation parasitism symbiosis herbivory mutualism commensalism primary producer photosynthesis chemosynthesis cellular respiration detritivore decomposer trophic level biomass food web keystone species primary succession pioneer species secondary succession invasive species biodiversity species diversity genetic diversity ecosystem diversity extirpation endangered species threatened species habitat fragmentation	1.3, 1.6, 1.7, 1.8, 2.5, 2.6. ELA Conventions 9th and 10th 1.1, 1.2, 1.3. ELA Listening and Speaking 9th and 10th 1.1, 1.7, 2.2, 2.3. ELA Listening and Speaking 11th and 12th 1.8, 1.14, 2.4. Foundation standards for Career Planning and Management, Technology, Problem Solving and Critical Thinking, Health and Safety, Responsibility and Flexibility, Ethics and Legal Responsibilities, Leadership and Teamwork, Technical Knowledge and Skills, and Demonstration and Application. CTE Standards for the Agriscience Pathway (C): 2.0- 2.5, 3.2-3.4, 4.3, 5.0-5.4, 6.0-6.2, 7.0-7.5, 10.0-10.4, 11.0-11.6, 12.0-12.3, 13.0-13.3. CTE Standards for the Forestry and Natural Resources Pathway (E): 1.5, 2.0-2.6, 4.2-4.3, 5.0-5.7, 7.1-7.2, 7.4-7.5, 8.0-8.4, 9.1-9.3, 10.1-10.4, 11.2, 11.4, 13.0-13.4.			

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	poaching Endangered Species Act captive breeding species survival plan biodiversity hotspot endemic			
Differentiation	Support -- for students who are struggling with the content	Content: The same as the general class Process: Extra time, scaffolding instruction, modified assignments, one-on-one help, partner work, Product: See above, in “Model Tasks” section. Products include presentations, lab reports, graphs and charts, and projects.		
	Extension – for high achieving students.	Content: Exploration of unit concepts in greater depth than is covered with the general class Process: Autonomous investigation, independent learning, modified assignments Product: See above, in “Model Tasks” section. Products include presentations, lab reports, graphs and charts, and projects.		
Evaluation	<i>Formative Assessments (ongoing & mid-lesson):</i> Used to assess student understanding and determine whether to continue with the lesson or if re-teaching is required. Strategies may include, but are not limited to checks for understanding, quizzes, mind maps, and homework review. Benchmark tests are required for all state tested subjects.			
	<i>Summative Assessments (unit final evaluation):</i> Typically used to assess student achievement at the end of units or end of course. Strategies may include, but are not limited to, chapter tests, research papers, lab reports, CST's and final exams.			

Unit 3	Length of Unit: 3-4 weeks			
	Key Vocabulary	Standards (referenced)	Model Tasks	Tools / Texts
Terrestrial Biomes	ecology species population community	CALIFORNIA CONTENT STANDARDS (how the course aligns with California and/or national curriculum standards):	Biome Detectives Real Time Climate Analysis	Environmental Science National Geographic
Desert and Tundra				

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Biomes Grassland Biomes Forest Biomes	ecosystem biosphere biotic factor abiotic factor habitat resource limiting factor carrying capacity logistic growth density dependent factor density independent factor biotic factor niche tolerance resource partitioning primary productivity trophic level biomass food chain food web climax community keystone species invasive species biome climate weather climatograph net primary production canopy emergent layer understory epiphyte deciduous estivation coniferous hibernation permafrost biodiversity hotspot endemic	CTE Agriculture and Natural Resources Industry Sector Standards (Academics): Algebra I 10.0, 12.0, 13.0, 15.0. Geometry 8.0, 10.0, 11.0, 12.0. Probability and Statistics 8.0. Science Investigation and Experimentation 1a, 1c, 1d, 1f, 1j, 1l, 1m. Economics 12.2, 12.2.2, 12.2.3, 12.2.5, 12.2.6, 12.2.7, 12.2.10, 12.4, 12.4.3. (Communications) ELA Reading 9th and 10th 2.1, 2.2, 2.3, 2.6, 2.7, 2.8. ELA Reading 11th and 12th 2.1, 2.3, 2.4. ELA Writing 9th and 10th 1.1, 1.2, 1.3, 1.5, 2.3, 2.5, 2.6. ELA Writing 11th and 12th 1.3, 1.6, 1.7, 1.8, 2.5, 2.6. ELA Conventions 9th and 10th 1.1, 1.2, 1.3. ELA Listening and Speaking 9th and 10th 1.1, 1.7, 2.2, 2.3. ELA Listening and Speaking 11th and 12th 1.8, 1.14, 2.4. Foundation standards for Career Planning and Management, Technology, Problem Solving and Critical Thinking, Health and Safety, Responsibility and Flexibility, Ethics and Legal Responsibilities, Leadership and Teamwork, Technical Knowledge and Skills, and	Terrestrial Biome Immersion Project	SIRS Internet Microsoft Word Microsoft Excel Microsoft PowerPoint ArcGIS Google Earth PASCO Probes Microscopes Water Quality Test Kits e-Portfolio KUDER	

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		Demonstration and Application. CTE Standards for the Agriscience Pathway (C): 1.5, 2.0-2.5, 3.2-3.4, 4.3, 10.0-10.4, 11.0-11.6, 12.0-12.3, 13.0-13.3. CTE Standards for the Forestry and Natural Resources Pathway (E): 1.0-1.5, 2.0-2.6, 3.0-3.5, 4.2-4.3, 5.0-5.7, 7.1-7.2, 7.4-7.5, 8.0-8.4, 9.1-9.3, 10.1-10.4, 11.2, 11.4, 13.0-13.4.		
Differentiation	Support -- for students who are struggling with the content	Content: The same as the general class Process: Extra time, scaffolding instruction, modified assignments, one-on-one help, partner work, Product: See above, in “Model Tasks” section. Products include presentations, lab reports, graphs and charts, and projects.		
	Extension – for high achieving students.	Content: Exploration of unit concepts in greater depth than is covered with the general class Process: Autonomous investigation, independent learning, modified assignments Product: See above, in “Model Tasks” section. Products include presentations, lab reports, graphs and charts, and projects.		
Evaluation	Formative Assessments (ongoing & mid-lesson): Used to assess student understanding and determine whether to continue with the lesson or if re-teaching is required. Strategies may include, but are not limited to checks for understanding, quizzes, mind maps, and homework review. Benchmark tests are required for all state tested subjects.			
	Summative Assessments (unit final evaluation): Typically used to assess student achievement at the end of units or end of course. Strategies may include, but are not limited to, chapter tests, research papers, lab reports, CST's and final exams.			

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Unit 4	Length of Unit: 3-4 weeks			
	Key Vocabulary	Standards (referenced)	Model Tasks	Tools / Texts
<u>Aquatic Biomes</u> Freshwater Biomes Ocean Biomes	coevolution convergent evolution parallel evolution parasitism symbiosis trophic level salinity photic zone aphotic zone littoral zone limnetic zone pelagic neritic benthic bathyl abyssal hadal wetland flood plain upwelling gyres calcium carbonate dissolved oxygen rocky intertidal soft-bottom intertidal estuary continental shelf soft-bottom subtidal communities hard-bottom subtidal communities kelp forest coral reef epipelagic mesopelagic deep-ocean ecosystems hydrothermal vent	CALIFORNIA CONTENT STANDARDS (how the course aligns with California and/or national curriculum standards): CTE Agriculture and Natural Resources Industry Sector Standards (Academics): Algebra I 10.0, 12.0, 13.0, 15.0. Geometry 8.0, 10.0, 11.0, 12.0. Probability and Statistics 8.0. Science Investigation and Experimentation: 1a, 1c, 1d, 1f, 1j, 1l, 1m. Economics: 12.2, 12.2.2, 12.2.3, 12.2.5, 12.2.6, 12.2.7, 12.2.10, 12.4, 12.4.3. (Communications) ELA Reading: 9th and 10th 2.1, 2.2, 2.3, 2.6, 2.7, 2.8. ELA Reading: 11th and 12th 2.1, 2.3, 2.4. ELA Writing 9th and 10 th : 1.1, 1.2, 1.3, 1.5, 2.3, 2.5, 2.6. ELA Writing 11th and 12 th : 1.3, 1.6, 1.7, 1.8, 2.5, 2.6. ELA Conventions 9th and 10 th : 1.1, 1.2, 1.3. ELA Listening and Speaking 9th and 10 th : 1.1, 1.7, 2.2, 2.3. ELA Listening and Speaking 11th and 12 th : 1.8, 1.14, 2.4. Foundation standards for Career Planning and Management, Technology, Problem Solving and	Name That Ecosystem Aquatic Ecosystem Immersion Project Coastal Ecology Field Studies Project	Environmental Science National Geographic SIRS Internet Microsoft Word Microsoft Excel Microsoft PowerPoint ArcGIS Google Earth PASCO Probes Microscopes Water Quality Test Kits e-Portfolio KUDER

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		Critical Thinking, Health and Safety, Responsibility and Flexibility, Ethics and Legal Responsibilities, Leadership and Teamwork, Technical Knowledge and Skills, and Demonstration and Application. CTE Standards for the Agriscience Pathway (C): 2.0-2.5, 3.2-3.4, 5.0-5.4, 6.0-6.2, 11.0-11.6, 12.0-12.3, 13.0-13.3. CTE Standards for the Forestry and Natural Resources Pathway (E): 1.0-1.5, 2.0-2.6, 4.2-4.3, 5.0-5.7, 6.0-6.6, 7.1-7.2, 7.4, 8.0-8.4, 11.2, 11.4, 13.0-13.4.		
Differentiation	Support -- for students who are struggling with the content	Content: The same as the general class Process: Extra time, scaffolding instruction, modified assignments, one-on-one help, partner work, Product: See above, in “Model Tasks” section. Products include presentations, lab reports, graphs and charts, and projects.		
	Extension – for high achieving students.	Content: Exploration of unit concepts in greater depth than is covered with the general class Process: Autonomous investigation, independent learning, modified assignments Product: See above, in “Model Tasks” section. Products include presentations, lab reports, graphs and charts, and projects.		
Evaluation	<i>Formative Assessments (ongoing & mid-lesson):</i> Used to assess student understanding and determine whether to continue with the lesson or if re-teaching is required. Strategies may include, but are not limited to checks for understanding, quizzes, mind maps, and homework review. Benchmark tests are required for all state tested subjects.			

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	<i>Summative Assessments (unit final evaluation):</i> Typically used to assess student achievement at the end of units or end of course. Strategies may include, but are not limited to, chapter tests, research papers, lab reports, CST's and final exams.
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Unit 5	Length of Unit: 4 to 5 weeks			
	Key Vocabulary	Standards (referenced)	Model Tasks	Tools / Texts
<u>Humans and the Environment</u> Human Population Environmental Health Urbanization	Industrial Revolution infant mortality life expectancy growth rate demography total fertility rate replacement fertility demographic transition wealth gap environmental health hazard pathogen epidemiology toxicology toxicity dose response dose-response relationship risk risk assessment infectious disease emerging disease pollution	CALIFORNIA CONTENT STANDARDS (how the course aligns with California and/or national curriculum standards): CTE Agriculture and Natural Resources Industry Sector Standards: (Academics) Algebra I: 10.0, 12.0, 13.0, 15.0. Geometry: 8.0, 10.0, 11.0, 12.0. Probability and Statistics: 8.0. Science Investigation and Experimentation: 1a, 1c, 1d, 1f, 1j, 1l, 1m. Economics: 12.2, 12.2.2, 12.2.3, 12.2.5, 12.2.6, 12.2.7, 12.2.10, 12.4, 12.4.3. (Communications) ELA Reading 9th and 10 th : 2.1, 2.2, 2.3, 2.6, 2.7, 2.8. ELA Reading 11th and 12 th : 2.1, 2.3, 2.4. ELA Writing 9th and 10 th : 1.1, 1.2, 1.3, 1.5, 2.3, 2.5, 2.6. ELA Writing 11th and 12 th : 1.3, 1.6, 1.7, 1.8, 2.5, 2.6. ELA Conventions 9th and 10 th : 1.1, 1.2, 1.3. ELA Listening and Speaking 9th and 10 th : 1.1, 1.7, 2.2, 2.3.	Replacement Fertility Trends Age Structure Chart Comparison The US Census Analysis Animal Testing Opinion Statements Emerging Disease Analysis and Vector Control Make a Difference: Air Pollution in School Predicting Earthquakes & Tsunamis Point Counterpoint: Should BPA be Regulated? Population Density & Carbon Emissions Urbanization Response Urban Planning Activity GIS and Solving Local Issues	Environmental Science National Geographic SIRS Internet Microsoft Word Microsoft Excel Microsoft PowerPoint ArcGIS Google Earth PASCO Probes Microscopes Water Quality Test Kits e-Portfolio KUDER

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	carcinogen teratogen neurotoxin mutagen asbestos radon bioaccumulation biomagnification land cover land use urban area rural area urbanization infrastructure heat island sprawl city planning geographic information system (GIS) zoning urban growth boundary (UGB) smart growth ecological restoration greenway wildlife corridor	ELA Listening and Speaking 11th and 12 th : 1.8, 1.14, 2.4. Foundation standards for Career Planning and Management, Technology, Problem Solving and Critical Thinking, Health and Safety, Responsibility and Flexibility, Ethics and Legal Responsibilities, Leadership and Teamwork, Technical Knowledge and Skills, and Demonstration and Application. CTE Standards for the Agriscience Pathway (C): 1.5, 2.0-2.5, 3.2-3.4, 13.0-13.3. CTE Standards for the Forestry and Natural Resources Pathway (E): 1.3-1.5, 2.0-2.6, 5.0-5.7, 6.0-6.6, 7.1-7.2, 9.1-9.3, 10.1-10.4, 11.2, 11.4, 13.0-13.4.			
Differentiation	Support -- for students who are struggling with the content	Content: The same as the general class Process: Extra time, scaffolding instruction, modified assignments, one-on-one help, partner work, Product: See above, in “Model Tasks” section. Products include presentations, lab reports, graphs and charts, and projects.			
	Extension – for high achieving students.	Content: Exploration of unit concepts in greater depth than is covered with the general class Process: Autonomous investigation, independent learning, modified assignments Product: See above, in “Model Tasks” section. Products include presentations, lab reports, graphs and			

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	charts, and projects.
Evaluation	<i>Formative Assessments</i> (ongoing & mid-lesson): Used to assess student understanding and determine whether to continue with the lesson or if re-teaching is required. Strategies may include, but are not limited to checks for understanding, quizzes, mind maps, and homework review. Benchmark tests are required for all state tested subjects.
	<i>Summative Assessments</i> (<i>unit final evaluation</i>): Typically used to assess student achievement at the end of units or end of course. Strategies may include, but are not limited to, chapter tests, research papers, lab reports, CST's and final exams.

Unit 6	Length of Unit: 4 weeks			
	Key Vocabulary	Standards (referenced)	Model Tasks	Tools / Texts
<u>Land Resources</u> Forestry and Resource Management Soil and Agriculture Mineral Resources and Mining	resource management maximum sustainable yield (MSY) ecosystem-based management adaptive management even-aged uneven-aged clear-cutting seed-tree approach shelterwood approach selection system deforestation old-growth forest multiple use monoculture prescribed burn salvage logging sustainable forestry certification parent material bedrock weathering soil horizon soil profile clay	CALIFORNIA CONTENT STANDARDS (how the course aligns with California and/or national curriculum standards): CTE Agriculture and Natural Resources Industry Sector Standards: (Academics) Algebra I: 10.0, 12.0, 13.0, 15.0. Geometry: 8.0, 10.0, 11.0, 12.0. Probability and Statistics: 8.0. Science Investigation and Experimentation: 1a, 1c, 1d, 1f, 1j, 1l, 1m. Economics: 12.2, 12.2.2, 12.2.3, 12.2.5, 12.2.6, 12.2.7, 12.2.10, 12.4, 12.4.3. (Communications) ELA Reading 9th and 10 th : 2.1, 2.2, 2.3, 2.6, 2.7, 2.8. ELA Reading 11th and 12 th : 2.1, 2.3, 2.4. ELA Writing 9th and 10 th : 1.1, 1.2, 1.3, 1.5, 2.3, 2.5, 2.6. ELA Writing 11th and 12 th : 1.3,	Solving the Battle over Clayoquot's Big Trees Management Approaches: What is <i>your</i> preference? Activity Paper Consumption and e-Solutions Marketing Campaign Soil Classification & Implications Activity Origins of Agriculture & it's Evolution to Green Revolution Transgenic vs. Native Varieties Position Statement Investigative Report: Mining Mineral Distribution Mapping	Environmental Science National Geographic SIRS Internet Microsoft Word Microsoft Excel Microsoft PowerPoint ArcGIS Google Earth PASCO Probes Microscopes Water Quality Test Kits e-Portfolio KUDER

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	silt sand loam soil degradation intercropping crop rotation cover crop tilling terracing contour farming overgrazing desertification irrigation salinization pesticide traditional agriculture yield industrial agriculture green revolution biological pest control integrated pest management (IPM) pollinator arable land malnutrition genetic engineering genetically modified organism biotechnology feedlot aquaculture seed bank sustainable agriculture organic agriculture mineral precipitation polymorph ore strip mining subsurface mining open pit mining	1.6, 1.7, 1.8, 2.5, 2.6. ELA Conventions 9th and 10th: 1.1, 1.2, 1.3. ELA Listening and Speaking 9th and 10th: 1.1, 1.7, 2.2, 2.3. ELA Listening and Speaking 11th and 12th: 1.8, 1.14, 2.4. Foundation standards for Career Planning and Management, Technology, Problem Solving and Critical Thinking, Health and Safety, Responsibility and Flexibility, Ethics and Legal Responsibilities, Leadership and Teamwork, Technical Knowledge and Skills, and Demonstration and Application. CTE Standards for the Agriscience Pathway (C): 1.5, 2.0-2.5, 3.2-3.4, 4.3, 10.0-10.4, 11.0-11.6, 12.0-12.3, 13.0-13.3. CTE Standards for the Forestry and Natural Resources Pathway (E): 1.2-1.5, 2.0-2.6, 3.0-3.5, 4.2- 4.3, 5.0-5.7, 9.1-9.3, 10.1-10.4, 11.2, 11.4, 13.0-13.4.	Point Counterpoint: Is It Safe to Mine in Retsof, NY?	

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	mountaintop removal placer mining tailings smelting acid drainage				
Differentiation	Support -- for students who are struggling with the content	Content: The same as the general class Process: Extra time, scaffolding instruction, modified assignments, one-on-one help, partner work, Product: See above, in “Model Tasks” section. Products include presentations, lab reports, graphs and charts, and projects.			
	Extension – for high achieving students.	Content: Exploration of unit concepts in greater depth than is covered with the general class Process: Autonomous investigation, independent learning, modified assignments Product: See above, in “Model Tasks” section. Products include presentations, lab reports, graphs and charts, and projects.			
Evaluation	<i>Formative Assessments (ongoing & mid-lesson):</i> Used to assess student understanding and determine whether to continue with the lesson or if re-teaching is required. Strategies may include, but are not limited to checks for understanding, quizzes, mind maps, and homework review. Benchmark tests are required for all state tested subjects.				
	<i>Summative Assessments (unit final evaluation):</i> Typically used to assess student achievement at the end of units or end of course. Strategies may include, but are not limited to, chapter tests, research papers, lab reports, CST's and final exams.				

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Unit 7	Length of Unit: 4 to 5 weeks			
	Key Vocabulary	Standards (referenced)	Model Tasks	Tools / Texts
<u>Air and Water Resources</u> Water Resources Water Pollution The Atmosphere Air Pollution	river system watershed groundwater permeable impermeable aquifer water table recharge zone well water diversion dam reservoir salinization desalination xeriscaping point-source nonpoint-source cultural eutrophication wastewater algal bloom pathogen red tide septic system fecal coliform bacteria nitrates phosphates dissolved oxygen ammonia turbidity	CALIFORNIA CONTENT STANDARDS (how the course aligns with California and/or national curriculum standards): CTE Agriculture and Natural Resources Industry Sector Standards: (Academics) Algebra I : 10.0, 12.0, 13.0, 15.0. Geometry: 8.0, 10.0, 11.0, 12.0. Probability and Statistics: 8.0. Science Investigation and Experimentation: 1a, 1c, 1d, 1f, 1j, 1l, 1m. Economics: 12.2, 12.2.2, 12.2.3, 12.2.5, 12.2.6, 12.2.7, 12.2.10, 12.4, 12.4.3. (Communications) ELA Reading 9th and 10 th : 2.1, 2.2, 2.3, 2.6, 2.7, 2.8. ELA Reading 11th and 12 th : 2.1, 2.3, 2.4. ELA Writing 9th and 10 th : 1.1, 1.2, 1.3, 1.5, 2.3, 2.5, 2.6. ELA Writing 11th and 12 th : 1.3, 1.6, 1.7, 1.8, 2.5, 2.6. ELA Conventions 9th and 10 th : 1.1, 1.2, 1.3. ELA Listening and Speaking 9th and 10 th : 1.1, 1.7, 2.2, 2.3. ELA Listening and Speaking 11th and 12 th : 1.8, 1.14, 2.4. Foundation standards for Career Planning and Management, Technology, Problem Solving and	Looking for Water in the Desert: Position Statement Local Water Sources and Supplies Investigative Report The Mississippi Watershed: The land-water connection Cultural Eutrophication Lab The Arcata Marsh: An Alternate to Traditional Water Treatment Plants Local Drinking Water Quality Report Analysis Tropospheric Air Movement Lab Effects of the Clean Air Act Data Analysis & Impact	Environmental Science National Geographic SIRS Internet Microsoft Word Microsoft Excel Microsoft PowerPoint ArcGIS Google Earth PASCO Probes Microscopes Water Quality Test Kits e-Portfolio KUDER

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		Critical Thinking, Health and Safety, Responsibility and Flexibility, Ethics and Legal Responsibilities, Leadership and Teamwork, Technical Knowledge and Skills, and Demonstration and Application. CTE Standards for the Agriscience Pathway (C): 1.5, 2.0-2.5, 3.2-3.4, 12.0-12.3, 13.0-13.3. CTE Standards for the Forestry and Natural Resources Pathway (E): 1.0-1.5, 2.0-2.6, 3.0-3.5, 4.2-4.3, 5.0-5.7, 6.0-6.6, 7.1-7.2, 7.4-7.5, 8.0-8.4, 9.1-9.3, 10.1-10.4, 11.2, 11.4, 13.0-13.4.			
Differentiation	Support -- for students who are struggling with the content	Content: The same as the general class Process: Extra time, scaffolding instruction, modified assignments, one-on-one help, partner work, Product: See above, in “Model Tasks” section. Products include presentations, lab reports, graphs and charts, and projects.			
	Extension – for high achieving students.	Content: Exploration of unit concepts in greater depth than is covered with the general class Process: Autonomous investigation, independent learning, modified assignments Product: See above, in “Model Tasks” section. Products include presentations, lab reports, graphs and charts, and projects.			
Evaluation	<i>Formative Assessments (ongoing & mid-lesson):</i> Used to assess student understanding and determine whether to continue with the lesson or if re-teaching is required. Strategies may include, but are not limited to checks for understanding, quizzes, mind maps, and homework review. Benchmark tests are required for all state tested subjects.				
	<i>Summative Assessments (unit final evaluation):</i> Typically used to assess student achievement at the end of units or end of course. Strategies may include, but are not limited to, chapter tests, research papers, lab reports, CST's and final exams.				

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Unit 8	Length of Unit:			
	Key Vocabulary	Standards (referenced)	Model Tasks	Tools / Texts
<u>Toward a Sustainable Future</u> Global Climate Change Nonrenewable Energy Renewable Energy Alternatives Waste Management	Greenhouse effect Greenhouse gases Thermohaline circulation El Nino Global climate change Global warming Climate model Coral bleaching Carbon footprint Carbon offset Carbon sequestration Kyoto protocol Energy Kinetic energy Potential energy Combustion Energy efficiency Renewable energy Nonrenewable energy Electricity Strip mining Subsurface mining Petroleum Petrochemical Oil sands Oil shale Methane hydrate Acid drainage Energy conservation Nuclear energy Nuclear fission Nuclear waste Nuclear fusion Biomass energy	CALIFORNIA CONTENT STANDARDS (how the course aligns with California and/or national curriculum standards): CTE Agriculture and Natural Resources Industry Sector Standards: (Academics) Algebra I : 10.0, 12.0, 13.0, 15.0. Geometry: 8.0, 10.0, 11.0, 12.0. Probability and Statistics: 8.0. Science Investigation and Experimentation: 1a, 1c, 1d, 1f, 1j, 1l, 1m. Economics:12.2, 12.2.2, 12.2.3, 12.2.5, 12.2.6, 12.2.7, 12.2.10, 12.4, 12.4.3. (Communications) ELA Reading 9th and 10 th : 2.1, 2.2, 2.3, 2.6, 2.7, 2.8. ELA Reading 11th and 12 th : 2.1, 2.3, 2.4. ELA Writing 9th and 10 th : 1.1, 1.2, 1.3, 1.5, 2.3, 2.5, 2.6. ELA Writing 11th and 12 th : 1.3, 1.6, 1.7, 1.8, 2.5, 2.6. ELA Conventions 9th and 10 th : 1.1, 1.2, 1.3. ELA Listening and Speaking 9th and 10 th : 1.1, 1.7, 2.2, 2.3. ELA Listening and Speaking 11th and 12 th :1.8, 1.14, 2.4.	Global Climate Change & the Maldive Islands Atmospheric Temperatures Analysis and Projection Activity Climate Clues in Ice: Informational Campaign Oil or Wilderness on Alaska's North Slope? Debate Fossil Fuel Form & Function: Yesterday, Today, & Tomorrow Fossil Fuel Presentations: Social, Economic, Scientific, & Health Impacts Ecological Footprint Analysis and Remedy Proposal Alternative Energy Sources, Feasability, & Geographic Distribution Project Reduce, Reuse, & Recycle Lab Compost Collaboration Lab	Environmental Science National Geographic SIRS Internet Microsoft Word Microsoft Excel Microsoft PowerPoint ArcGIS Google Earth PASCO Probes Microscopes Water Quality Test Kits e-Portfolio KUDER

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	Biofuel Geothermal energy Hydropower Tidal energy Passive solar heating Active solar heating Photovoltaic cell Wind turbine Electrolysis Fuel cell Municipal solid waste Industrial waste Hazardous waste Sanitary landfill Leachate Incineration Source reduction Biodegradable Composting Recycling e-waste surface impoundment deep-well injection radioactive waste Superfund	Foundation standards for Career Planning and Management, Technology, Problem Solving and Critical Thinking, Health and Safety, Responsibility and Flexibility, Ethics and Legal Responsibilities, Leadership and Teamwork, Technical Knowledge and Skills, and Demonstration and Application. CTE Standards for the Agriscience Pathway (C): 1.5, 2.0-2.5, 3.2-3.4, 4.3, 5.0-5.4, 6.0-6.2, 7.0-7.5, 10.0-10.4, 11.0-11.6, 12.0-12.3, 13.0-13.3. CTE Standards for the Forestry and Natural Resources Pathway (E): 1.0-1.5, 2.0-2.6, 3.0-3.5, 5.0-5.7, 6.0-6.6, 7.1-7.2, 7.4-7.5, 9.1-9.3, 10.1-10.4, 11.2, 11.4, 13.0-13.4.	
Differentiation	Support -- for students who are struggling with the content	Content: The same as the general class Process: Extra time, scaffolding instruction, modified assignments, one-on-one help, partner work, Product: See above, in "Model Tasks" section. Products include presentations, lab reports, graphs and charts, and projects.	
	Extension – for high achieving students.	Content: Exploration of unit concepts in greater depth than is covered with the general class Process: Autonomous investigation, independent learning, modified assignments Product: See above, in "Model Tasks" section. Products include presentations, lab reports, graphs and charts, and projects.	

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Unit 9	Length of Unit: Integrated throughout previous 8 units			
	Key Vocabulary	Standards (referenced)	Model Tasks	Tools / Texts
<u>Career Exploration</u> Interest Inventories Environmental Careers Overview Post-Secondary Connection Job Market Analysis ePortfolio Presentation	Earning potential Post-secondary education Trade school Associate's degree Bachelor's degree Master's degree Doctorate Upward mobility Soft Skills 21 st Century skills Green Industry Introspection Collaboration Business ethics Resource management Interpersonal communication Job outlook	CALIFORNIA CONTENT STANDARDS (how the course aligns with California and/or national curriculum standards): CTE Agriculture and Natural Resources Industry Sector Standards: (Academics) Algebra I: 10.0, 12.0, 13.0, 15.0. Geometry: 8.0, 10.0, 11.0, 12.0. Probability and Statistics: 8.0. Science Investigation and Experimentation: 1a, 1c, 1d, 1f, 1j, 1l, 1m. Economics: 12.2, 12.2.2, 12.2.3, 12.2.5, 12.2.6, 12.2.7, 12.2.10, 12.4, 12.4.3. (Communications) ELA Reading 9th and 10 th : 2.1, 2.2, 2.3, 2.6, 2.7, 2.8. ELA Reading 11th and 12 th : 2.1, 2.3, 2.4. ELA Writing 9th and 10 th : 1.1, 1.2, 1.3, 1.5, 2.3, 2.5, 2.6. ELA Writing 11th and 12 th :	KUDER Career Inventory Assessments “My Dream Eco-Job” Project The Green College Connection “So You Want to be a Eco-Friendly Millionaire” job planning project Final ePortfolio Presentations	Environmental Science National Geographic SIRS Internet Microsoft Word Microsoft Excel Microsoft PowerPoint ArcGIS Google Earth PASCO Probes Microscopes Water Quality Test Kits e-Portfolio KUDER

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		1.3, 1.6, 1.7, 1.8, 2.5, 2.6. ELA Conventions 9th and 10th: 1.1, 1.2, 1.3. ELA Listening and Speaking 9th and 10th: 1.1, 1.7, 2.2, 2.3. ELA Listening and Speaking 11th and 12th: 1.8, 1.14, 2.4. Foundation standards for Career Planning and Management, Technology, Problem Solving and Critical Thinking, Health and Safety, Responsibility and Flexibility, Ethics and Legal Responsibilities, Leadership and Teamwork, Technical Knowledge and Skills, and Demonstration and Application. CTE Standards for the Agriscience Pathway (C): 1.5, 2.0-2.5, 3.2-3.4, 4.3, 5.0-5.4, 6.0-6.2, 7.0-7.5, 10.0-10.4, 11.0-11.6, 12.0-12.3, 13.0-13.3. CTE Standards for the Forestry and Natural Resources Pathway (E): 1.0-1.5, 2.0-2.6, 3.0-3.5, 4.2-4.3, 5.0-5.7, 6.0-6.6, 7.1-7.2, 7.4-7.5, 8.0-8.4, 9.1-9.3, 10.1-10.4, 11.2, 11.4, 13.0-13.4.		
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