

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

Course Title		Green Urban Design and Technology				Course Code		R0403-R0404	
Transcript Title:	Green Urban Design and Tech			Grades Levels:	10-12		Board Adoption Date:		July 2013
Content Area:	CTE			GPA Scale:			Date Course Submitted:		May 2013
Credential Req:			Graduation Subject Areas:		Applied skills		elective		
UC/CSU “A-G” Area Approvals:				School Site that wrote and submitted the course:				Costa Mesa High School	
Prerequisite(s):	Algebra 1, Intro to Environmental Studies (recommended)								
Next course(s):	Environmental Field Studies								

COURSE DESCRIPTION (catalog summary):

This course is the second in a three year sequence of career technical education courses that prepare students to engage in environmental issues and become sound decision makers as the move into college and career pathways. This course guides students to an understanding of green urban design principles and the ways in which urban space is planned and constructed. Topics covered include geography, green building design, transportation, public space, green business, urban design, public health, and geographic information systems.

GOALS (expected performance outcomes for students):

1. Students will demonstrate knowledge and understanding of methods of sustainable urban planning and design, and insight into research and development in urban design and urban development.
3. Students will demonstrate the ability to integrate critically and systematically knowledge and skills acquired in urban design and sustainability as well as green technology.
4. Students will demonstrate an ability to communicate observations, findings, processes, and products in writing and in oral and visual presentations that involve various degrees of challenge
5. Students will demonstrate an ability to plan and design green urban structures
6. Students will demonstrate an ability to make decisions in the field of sustainable urban planning and design with consideration of relevant scientific, technological, ethical, social, and environmental aspects.
7. Students will demonstrate an awareness of the decisive influence of sustainable urban planning and design on the living environment of human beings and other living creatures

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

Course Title	<i>Green Urban Design and Technology</i>	Course Code	<i>R0403-R0404</i>
---------------------	--	--------------------	--------------------

CALIFORNIA CONTENT STANDARDS *(how the course aligns with California and/or national curriculum standards):*

Social Studies Standards

Historical and Social Sciences Analysis Skills:

Chronological and Spatial Thinking: (1) Students compare the present with the past, evaluating the consequences of past events and decisions and determining the lessons that were learned. (2) Students analyze how change happens at different rates at different times, understand that some aspects can change while others remain the same, and understand that change is complicated and affects not only technology and politics but also values and beliefs. (4) Students relate current events to the physical and human characteristics of places and regions.

Research, Evidence, and Point of View: (1) Students distinguish valid arguments from fallacious arguments...; (4) Students construct and test hypotheses; collect, evaluate, and employ information from multiple primary and secondary sources; and apply it in oral and written presentations.

Content Standards: 11.8 Students analyze the economic boom and social transformation of post-World War II America. 11.8.6 Students discuss the diverse environmental regions of North America, their relationship to local economies, and the origins and prospects of environmental problems in those regions. 11.8.7 Students describe the effects on society and the economy of technological developments since 1945...11.11.5 Students trace the impact of, need for, and controversies associated with environmental conservation, expansion of the national park system, and the development of environmental protection laws, with particular attention paid to the interaction between environmental protection advocates and property right advocates.

Science Standards

Biological Science Standards (partial listing)

6.c Students know how Earth's climate has changed over time, corresponding to changes in Earth's geography, atmospheric composition, and other factors...; 6.d Students know how computer models are used to predict the effects of the increase in greenhouse gases on climate for the planet as a whole and for specific regions. 7.b Students know the global carbon cycle: the different physical and chemical forms of carbon in the atmosphere, ocean, biomass, fossil fuels, and the movement of carbon among these reservoirs. 8. Students know that life has changed the Earth's atmosphere, and that changes in the atmosphere affect conditions for life.

Investigation and Experimentation

1. Students know that scientific progress is made by asking meaningful questions and conducting careful investigations. 1.d Students formulate explanations by using logic and evidence. 1.h Students read and interpret maps. 1.i Students analyze situations and solve problems that require combining and applying concepts from more than one area of science. 1.m Students investigate a science-based societal issue by researching the literature, analyzing data, and communicating the findings.

CTE Foundation Standards

2.2 Communication:

(1.6) Develop presentations by using clear research questions and creative and critical research strategies (e.g., field studies, oral histories, interviews, experiments, electronic sources)

2.3 Written and Oral English Language Conventions

2.4 Listening and Speaking Skills including delivery of a research presentation.

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

Course Title	<i>Green Urban Design and Technology</i>	Course Code	<i>R0403-R0404</i>
---------------------	--	--------------------	--------------------

3.0 Career Planning and Management

Students understand how to make effective decisions, use career information, and manage personal career plans. (3.1-3.7)

4.0 Technology

Students know how to use contemporary and emerging technological resources in diverse and changing personal, community, and workplace environments (4.1-4.3)

5.0 Problem Solving and Critical Thinking

Students understand how to create alternative solutions by using critical and creative thinking skills, such as logical reasoning, analytical thinking, and problem-solving techniques (5.1-5.3)

CTE Energy and Environmental Technology Pathway

B1.0 Students understand energy resources and the effects of these resources and systems on the environment.

B2.0 Students understand the environmental implications of energy conversion processes and energy transmission systems.

B3.0 Students understand the applications and environmental effects of energy extraction processes, energy conservation systems, and storage systems.

B4.0 Students understand and apply specific career preparation and planning requirements for employment in the environmental technology industry and understand how these requirements apply across all standards for students planning to successfully enter or advance in the industry.

CTE Environmental and Natural Science Engineering Pathway

E2.0 Students study and understand the fundamentals of earth science as they relate to environmental engineering:

E3.0 Students understand the effects of the weather, the hydrosphere, and the atmosphere on the environment:

E5.0 Students understand the design process and how to solve analysis and design problems:

E.5.1 Understand the steps in the design process; E.5.2 Determine what information and principles are relevant to a problem and be able to justify choices in determining a solution. E.5.3 Choose between alternate solutions in solving a problem and be able to justify choices in determining a solution.

3.5 Understand the process of developing multiple details into a single solution. E.5.6 Build a prototype from plans... E.5.7 Evaluate and redesign a prototype on the basis of collected test data.

E9.0 Understand the effective use of environmental and natural science equipment.

Primary and Supplemental Texts:

Urban Design Toolkit, Ministry for the Environment, New Zealand, 2009 (3rd edition)

ISBN: 978-0-478-33152-3 (print); 978-0-478-33153-0 (electronic) entire text: 128 pages)

Urban Design Case Studies, Ministry for the Environment, New Zealand, 2005. (104 pages)

Excerpts from the following textbooks:

- *Sustainable Urbanism*. Farr, Douglas. Wiley 2008
- *Environmental Science: Earth as a Living Planet*, Botkin and Keller, 6th ed., 2007.

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

Course Title	<i>Green Urban Design and Technology</i>	Course Code	<i>R0403-R0404</i>
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- *Physical Geography: The Global Environment*. Third Edition. Blij, Muller, Williams. Oxford University Press. Copyright 2004.
- *Introducing Geographic Information Systems*. Michael Kennedy. Second Edition. Copyright 2009.
- *The Urban Design Handbook, Techniques and Working Methods*, Urban Design Associates, W.W. Norton & Company, Inc., 2003

EVALUATION (how the effectiveness of the course will be monitored and assessed):

Students will be evaluated using formative and summative assessments that will help us monitor their progress toward meeting the above course objectives. We will also track student completion of academy courses as a part of the district CTE pathway monitoring.

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

Course Title	<i>Green Urban Design and Technology</i>	Course Code	<i>R0403-R0404</i>
---------------------	--	--------------------	--------------------

Unit 1	4 weeks			
	Key Vocabulary	Standards (referenced)	Model Tasks	Tools / Texts
Geography Shapes an Urban Society Climate Geography Site Selection GPS GIS Mapping	<i>climate</i> <i>weather</i> <i>atmosphere</i> <i>Greenhouse effect</i> <i>GPS</i> <i>GIS</i> <i>Hadley cell</i> <i>Ferrell cell</i> <i>high pressure</i> <i>low pressure</i> <i>front</i> <i>convection</i> <i>currents</i> <i>biomes</i> <i>precipitation</i> <i>temperature</i> <i>troposphere</i> <i>stratosphere</i> <i>mesosphere</i> <i>thermosphere</i> <i>floodplains</i> <i>waterways</i> <i>site planning</i>	<i>Social Studies</i> <i>Chronological and Spatial Thinking: 1, 2, and 4</i> <i>Research, Evidence, and Point of View: 1 and 4</i> <i>Content Standards: 11.8, 11.8.6, 11.8.7, 11.11.5</i> <i>Biological Science Standards: 6.c, 6.d, 7.b, 8</i> <i>Investigation and Experimentation: 1, 1.d, 1.h, 1.i, 1.m</i> <i>CTE Foundation Standards: 2.2 (1.6), 2.3, 2.4, 3.0 (3.1-3.7), 4.0 (4.1-4.3), 5.0 (5.1-5.3)</i> <i>Energy, Environment, and Technology Pathway: B1.0, B2.0, B3.0, B4.0</i> <i>Environmental and Natural Science Engineering Pathway: E2.0, E3.0, E5.0, E5.1, E5.3, E5.6, E5.7, E9.0</i>	<i>*=writing assignment, **=reading assignment, ***=technology based, != career focus, Q=quiz, T=Test, R= Research</i> 1. Learn fundamental elements of geography including climate, weather patterns, atmosphere (Physical Geography: The Global Environment)**. 2. Analyze how geography shapes the development of cities. *, ** 3. Learn how to navigate and collect feature data such as points, lines, and polygons using a compass and a Global Positioning system (GPS unit). Students will download data points into a geographic information systems environments (ArcGIS) 4. Analyze fundamentals of reading paper maps ** R 5. Analyze the functions of major on line mapping tools including Google Earth and Google Maps. *** 6. Compare and Contrast digital and paper forms of mapping. * 7. Learn fundamentals of working with a Smart board and PowerPoint to make a presentation***, ! 8. Research and present a case study of how a geographic element affected the development of a city. *, ** T	<i>see above, plus:</i> <i>Movies: When the Levees Broke (with accompanying curriculum), Earth</i>
Differentiation	Support -- for students who	Content: Reading assignments will be modified to fit students' needs Process: Extended time, scaffolded instructions, partner work, peer tutoring, modified assignments		

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

Course Title		Green Urban Design and Technology	Course Code	R0403-R0404
	are struggling with the content	Product: See “Model Tasks” – many products include elements of student choice and personalization such as topic, artistic design, lab design, and mode of presentation. Students can study similar topics at varying degrees of depth and complexity. End products will also be modified to fit students’ needs		
	Extension – for high achieving students.	Content: Modified reading assignments, more in depth research into given topics Process: Extension activities, autonomous investigation, independent research, modified assignments Product: See “Model Tasks” – many products inherently contain elements for building depth for high achieving students, including more rigorous experimental design elements and greater detail and mastery of content for projects		
Evaluation	Formative Assessments (<i>ongoing & mid-lesson</i>): Periodic checking for understanding; progress checks for projects; worksheets; submission of research summaries; student surveys; ePortfolio progress checks; and internship progress checks			
	Summative Assessments (<i>unit final evaluation</i>): <i>Research and present a case study of how a geographic element affected the development of a city</i>			

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

Course Title	<i>Green Urban Design and Technology</i>	Course Code	<i>R0403-R0404</i>
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Unit 2	4 weeks			
	Key Vocabulary	Standards (referenced)	Model Tasks	Tools / Texts
Green Building LEED Certified Indoor Air Quality Sustainable Design Water Management Sustainable Building Materials	LEED indoor air pollution sick building syndrome VOCs lead carbon monoxide formaldehyde radon-222 green building CHPS runoff recycle infiltration	<i>Social Studies</i> Chronological and Spatial Thinking: 1, 2, and 4 Research, Evidence, and Point of View: 1 and 4 Content Standards: 11.8, 11.8.6, 11.8.7, 11.11.5 <i>Biological Science</i> Standards: 6.c, 6.d, 7.b, 8 Investigation and Experimentation: 1, 1.d, 1.h, 1.i, 1.m CTE Foundation Standards: 2.2 (1.6), 2.3, 2.4, 3.0 (3.1-3.7), 4.0 (4.1-4.3), 5.0 (5.1-5.3) Energy, Environment, and Technology Pathway: B1.0, B2.0, B3.0, B4.0 Environmental and Natural Science Engineering Pathway: E2.0, E3.0, E5.0, E5.1, E5.3, E5.6, E5.7, E9.0	*=writing assignment, **=reading assignment, ***=technology based, !=career focus, Q=quiz, T=Test, R=Research 1. Analyze the elements that make a sustainable building site * and ** 2. Analyze sustainable building materials. * and ** 3. Evaluate the components of a LEED certified building. * and ** 4. Use paper sketching to create a 3 dimensional model of a sustainable building. Q 5. Learn Goggle Sketch Up to design a model of a new sustainable building. **, *** 6. Learn how to use Google Earth within Google Sketch up to put a model at a sustainable site. ** 7. Hear from a group panel about career opportunities available within this field. *! 8. Visit the Irvine Great Park LEED certified ABC Home. *! 9. Present to the class their own redesigned sustainable building on campus using the Smart board, PowerPoint, and Sketchup*** T	see above, plus: - City of Austin: Sustainable Building Sourcebook http://www.greenbuilder.com/sourcebook - U.S. Green Building Council (USGBC) http://usgbc.org (sustainable design tools and resources) - Why build Green? http://www.epa.gov/greenbuilding "A sustainable Future Regenerative Development, http://www.mfe.govt.nz/publicans/sus-deve/towards-a-sustainable-future/page3.html - Green school buildings http://www.greenschoolbuildings.org - Sketch up tutorials http://sketchup.google.com/intl/en/training/videos.html - U.S. Green Building Council www.usgbc.org - California Green Business Program http://www.greenbusinessca.org/ - Movie: Frontline Green Builders Speak

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

Course Title		Green Urban Design and Technology	Course Code	R0403-R0404
Differentiation	Support -- for students who are struggling with the content	Content: Reading assignments will be modified to fit students’ needs Process: Extended time, scaffolded instructions, partner work, peer tutoring, modified assignments Product: See “Model Tasks” – many products include elements of student choice and personalization such as topic, artistic design, lab design, and mode of presentation. Students can study similar topics at varying degrees of depth and complexity. End products will also be modified to fit students’ needs		
	Extension – for high achieving students.	Content: Modified reading assignments, more in depth research into given topics Process: Extension activities, autonomous investigation, independent research, modified assignments Product: See “Model Tasks” – many products inherently contain elements for building depth for high achieving students, including more rigorous experimental design elements and greater detail and mastery of content for projects		
Evaluation	Formative Assessments (ongoing & mid-lesson): Periodic checking for understanding; progress checks for projects; worksheets; submission of research summaries; student surveys; ePortfolio progress checks; and internship progress checks			
	Summative Assessments (unit final evaluation): Present to the class a redesigned sustainable building on campus using the Smart board, PowerPoint, and Sketchup			

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

Course Title	<i>Green Urban Design and Technology</i>	Course Code	<i>R0403-R0404</i>
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Unit 3	4 weeks			
	Key Vocabulary	Standards (referenced)	Model Tasks	Tools / Texts
Green Transportation Urban Planning Walkability Public Transportation Options Smart Growth	emissions smog nitrogen oxides carbon dioxide ridership transportation corridors walkability light rail CNG diesel gasoline hydrogen fuel cell	<i>Social Studies Chronological and Spatial Thinking: 1, 2, and 4</i> <i>Research, Evidence, and Point of View: 1 and 4</i> <i>Content Standards: 11.8, 11.8.6, 11.8.7, 11.11.5</i> <i>Biological Science Standards: 6.c, 6.d, 7.b, 8</i> <i>Investigation and Experimentation: 1, 1.d, 1.h, 1.i, 1.m</i> <i>CTE Foundation Standards: 2.2 (1.6), 2.3, 2.4, 3.0 (3.1-3.7), 4.0 (4.1-4.3), 5.0 (5.1-5.3)</i> <i>Energy, Environment, and Technology Pathway: B1.0, B2.0, B3.0, B4.0</i> <i>Environmental and Natural Science Engineering Pathway: E2.0, E3.0, E5.0, E5.1, E5.3, E5.6, E5.7, E9.0</i>	<i>*=writing assignment, **=reading assignment, ***=technology based, != career focus, Q=quiz, T=Test, R= Research</i> <i>In this unit students will:</i> <i>Evaluate various automobiles and their emissions rate. * and **</i> <i>Analyze road systems and their implications for urban development. * and **</i> <i>Distinguish key structural and functional elements of bridges, boats, and rail. **</i> <i>Analyze the relative cost and benefits of types of transportation within an urban environment. * and **</i> <i>Students will question a panel of experts in the field of green transportation including (Cycles of Change and Safe Routes to School, Transform, MUNI) Students will take notes and summarize learning. Students will reflect on relationships between the work of the "green transportation experts and concepts read about and discussed in class. *</i> <i>Visit web-sites such as Walkscore and Public Transport Accessibility and write summaries of what can be found on each of the sites: http://www.intelligentspace.com/modelling/transportaccessibility.htm http://walkscore.com , R</i> <i>Research and plan a route to a designated location using public transportation options. After examining all proposals, the class will vote on the best and then take the proposed trip. R, ***</i> <i>Explore the use of accessibility assessments</i>	<i>See above, plus:</i> <i>Sections on "The Integration of Transportation, Land Use and Technology"; "Car-Free Housing"; "Managing Travel Demand"; and "Car Sharing ."The University of California Transportation Center (papers, journal articles, magazine (ACCESS), etc.) http://www.uctc.net</i> <i>Centre for Sustainable Transportation (Canada) http://www.cstctd.org/</i> <i>World Bank: Urban Transport http://www.worldbank.org/transport/ut_over.htm</i> <i>U.S. Department of Transportation, Federal Highway Administration (FHWA) http://www.fhwa.dot.gov/</i> <i>Movie: Who Killed</i>

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

Course Title	Green Urban Design and Technology			Course Code	R0403-R0404
			<i>using data from their own class regarding how each student travels to and from school. Students will identify barriers to accessibility and resources available to address those barriers. Students will develop an accessibility action plan. R</i>	<i>the Electric Car</i>	
Differentiation	Support -- for students who are struggling with the content	Content: Reading assignments will be modified to fit students' needs Process: Extended time, scaffolded instructions, partner work, peer tutoring, modified assignments Product: See "Model Tasks" – many products include elements of student choice and personalization such as topic, artistic design, lab design, and mode of presentation. Students can study similar topics at varying degrees of depth and complexity. End products will also be modified to fit students' needs			
	Extension – for high achieving students.	Content: Modified reading assignments, more in depth research into given topics Process: Extension activities, autonomous investigation, independent research, modified assignments Product: See "Model Tasks" – many products inherently contain elements for building depth for high achieving students, including more rigorous experimental design elements and greater detail and mastery of content for projects			
Evaluation	Formative Assessments (<i>ongoing & mid-lesson</i>): Periodic checking for understanding; progress checks for projects; worksheets; submission of research summaries; student surveys; ePortfolio progress checks; and internship progress checks				
	Summative Assessments (<i>unit final evaluation</i>): Explore the use of accessibility assessments using data from their own class regarding how each student travels to and from school. Students will identify barriers to accessibility and resources available to address those barriers. Students will develop an accessibility action plan				

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

Course Title	<i>Green Urban Design and Technology</i>	Course Code	<i>R0403-R0404</i>
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Unit 4	3 weeks			
	Key Vocabulary	Standards (referenced)	Model Tasks	Tools / Texts
Green Public Spaces Public Space Sustainability Sense of Place	<i>public space</i> <i>sustainability</i> <i>sense of place</i> <i>installation art</i> <i>culture</i> <i>community</i>	<i>Social Studies</i> <i>Chronological and Spatial Thinking: 1, 2, and 4</i> <i>Research, Evidence, and Point of View: 1 and 4</i> <i>Content Standards: 11.8, 11.8.6, 11.8.7, 11.11.5</i> <i>Biological Science</i> <i>Standards: 6.c, 6.d, 7.b, 8</i> <i>Investigation and Experimentation: 1, 1.d, 1.h, 1.i, 1.m</i> <i>CTE Foundation</i> <i>Standards: 2.2 (1.6), 2.3, 2.4, 3.0 (3.1-3.7), 4.0 (4.1-4.3), 5.0 (5.1-5.3)</i> <i>Energy, Environment, and Technology Pathway: B1.0, B2.0, B3.0, B4.0</i> <i>Environmental and Natural Science Engineering Pathway: E2.0, E3.0, E5.0, E5.1, E5.3, E5.6, E5.7, E9.0</i>	<i>*=writing assignment, **=reading assignment, ***=technology based, != career focus, Q=quiz, T=Test, R= Research</i> <i>Read and compare/contrast three different case studies on green public spaces in specific locales. Students will also make recommendations for Southern California based on their new learning. * and **</i> <i>Students will read and respond to an article about what makes a public space and its role in society. **, *</i> <i>Analyze on line examples of public spaces and artwork through images and Google earth ***</i> <i>Analyze what makes a public space part of a sustainable space (Text excerpt: Sustainable Urbanism)** and *</i> <i>Visit a local skate park to analyze its design in light of our readings about open space and the community *!,</i> <i>Design a plan for improving the quality of public space at CMHS/MS and in the community. Chosen plan will be implemented as a class project (to the degree that it is feasible) ***, R</i>	<i>see above, plus:</i> <i>National Building Museum: What makes a great Green Place?</i> http://www.nbm.org/about-us/multimedia/great-green-places-1.html <i>Green Public Spaces Mapping and Priorities:</i> http://www.openspace.ca.ac.uk/pdf/appendixf/OPENspacewebsite_APPENDIX_F_resource_17.pdf <i>Project for Public Spaces:</i> http://www.pps.org/great_public_spaces/one?public_place_id=183
Differentiation	Support -- for students who are struggling with the	Content: Reading assignments will be modified to fit students' needs Process: Extended time, scaffolded instructions, partner work, peer tutoring, modified assignments Product: See "Model Tasks" – many products include elements of student choice and personalization such as		

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

Course Title		Green Urban Design and Technology	Course Code	R0403-R0404
	content	topic, artistic design, lab design, and mode of presentation. Students can study similar topics at varying degrees of depth and complexity. End products will also be modified to fit students' needs		
	Extension – for high achieving students.	Content: Modified reading assignments, more in depth research into given topics Process: Extension activities, autonomous investigation, independent research, modified assignments Product: See “Model Tasks” – many products inherently contain elements for building depth for high achieving students, including more rigorous experimental design elements and greater detail and mastery of content for projects		
Evaluation	Formative Assessments (<i>ongoing & mid-lesson</i>): Periodic checking for understanding; progress checks for projects; worksheets; submission of research summaries; student surveys; ePortfolio progress checks; and internship progress checks			
	Summative Assessments (<i>unit final evaluation</i>): Design a plan for improving the quality of public space at CMHS/MS and in the community. Chosen plan will be implemented as a class project (to the degree that it is feasible)			

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

Course Title	<i>Green Urban Design and Technology</i>	Course Code	<i>R0403-R0404</i>
---------------------	--	--------------------	--------------------

Unit 5	3 weeks			
	Key Vocabulary	Standards (referenced)	Model Tasks	Tools / Texts
Green Business Business Design Marketing and Labeling Sourcing Zero Waste Ecological Footprint 3Rs	<i>product design</i> <i>marketing</i> <i>green washing</i> <i>false advertising</i> <i>natural organic</i> <i>“green”</i> <i>fair trade</i> <i>free trade</i> <i>zero waste</i> <i>ecological footprint</i> <i>carbon footprint</i> <i>reduce</i> <i>reuse</i> <i>recycle</i> <i>compost</i>	<i>Social Studies Chronological and Spatial Thinking: 1, 2, and 4</i> <i>Research, Evidence, and Point of View: 1 and 4</i> <i>Content Standards: 11.8, 11.8.6, 11.8.7, 11.11.5</i> <i>Biological Science Standards: 6.c, 6.d, 7.b, 8</i> <i>Investigation and Experimentation: 1, 1.d, 1.h, 1.i, 1.m</i> <i>CTE Foundation Standards: 2.2 (1.6), 2.3, 2.4, 3.0 (3.1-3.7), 4.0 (4.1-4.3), 5.0 (5.1-5.3)</i> <i>Energy, Environment, and Technology Pathway: B1.0, B2.0, B3.0, B4.0</i> <i>Environmental and Natural Science Engineering Pathway: E2.0, E3.0, E5.0, E5.1, E5.3, E5.6, E5.7, E9.0</i>	<i>*=writing assignment, **=reading assignment, ***=technology based, != career focus, Q=quiz, T=Test, R= Research</i> <i>Analyze several articles from business magazines to determine what makes a strong business. *, **</i> <i>Read and respond to an article about green washing and false advertising *, **</i> <i>Analyze criteria for green businesses * and **</i> <i>Create a model of their own green business **</i> <i>Tour the offices of local businesses to learn about their sustainability programs. (ex. Disneyland Resort) *!</i> <i>Use various technology including the Smart board , PowerPoint, and Google Earth to present their green business in its urban location. ***</i> <i>Unit Q and Semester 1 Final (including essay questions)</i>	<i>See above, plus:</i> <i>New York Times Green Blog and http://www.nytimes.com/greenblog</i> <i>Adding Green to Urban Design: A city for us and the Future. (http://www.cityofchicago.org/content/dam/city/depts/zlup/Sustainable_Development/Publications/Green_Urban_Design/GUD_booklet.pdf)</i> <i>Ethical Soles: ‘Why Green Washing is a threat to Cultural Change’ , Adbusters http://www.adbusters.org/blogs/blackspot/ethical.soles.html</i> <i>Newsweek: Top 10 business ideas of 2010. http://www.newsweek.com/2010/10/18/the-100-greenest-companies-in-america.html http://www.pdc.us/pdf/dev_serv?pubs/dev_rosequarter_planning_analysis.pdf</i> <i>Planning Sustainable Cities: Policy Directions: Global Report on Human Settlements 2009, United Nations, 2010.</i>
Differentiation		Content: Reading assignments will be modified to fit students’ needs		

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

Course Title		Green Urban Design and Technology	Course Code	R0403-R0404
	Support -- for students who are struggling with the content	Process: Extended time, scaffolded instructions, partner work, peer tutoring, modified assignments Product: See “Model Tasks” – many products include elements of student choice and personalization such as topic, artistic design, lab design, and mode of presentation. Students can study similar topics at varying degrees of depth and complexity. End products will also be modified to fit students’ needs		
	Extension – for high achieving students.	Content: Modified reading assignments, more in depth research into given topics Process: Extension activities, autonomous investigation, independent research, modified assignments Product: See “Model Tasks” – many products inherently contain elements for building depth for high achieving students, including more rigorous experimental design elements and greater detail and mastery of content for projects		
Evaluation	Formative Assessments (ongoing & mid-lesson): Periodic checking for understanding; progress checks for projects; worksheets; submission of research summaries; student surveys; ePortfolio progress checks; and internship progress checks			
	Summative Assessments (unit final evaluation): Unit Quiz, Semester 1 Final (with essay questions)			

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

Course Title	<i>Green Urban Design and Technology</i>	Course Code	<i>R0403-R0404</i>
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Unit 6	4 weeks			
	Key Vocabulary	Standards (referenced)	Model Tasks	Tools / Texts
Green Public Health Water Pollution Air Pollution Noise Pollution Light Pollution Biodiversity and Green Spaces LULUs Epidemiology	public health water pollution phthalates BPA endocrine disruptors hormonally active agents PCBs PBDEs air pollution air toxics photochemical smog noise pollution light pollution biodiversity green space psychological benefits aesthetic benefits locally undesirable land uses (LULUs) epidemiology poverty	Social Studies Chronological and Spatial Thinking: 1, 2, and 4 Research, Evidence, and Point of View: 1 and 4 Content Standards: 11.8, 11.8.6, 11.8.7, 11.11.5 Biological Science Standards: 6.c, 6.d, 7.b, 8 Investigation and Experimentation: 1, 1.d, 1.h, 1.i, 1.m CTE Foundation Standards: 2.2 (1.6), 2.3, 2.4, 3.0 (3.1-3.7), 4.0 (4.1-4.3), 5.0 (5.1-5.3) Energy, Environment, and Technology Pathway: B1.0, B2.0, B3.0, B4.0 Environmental and Natural Science Engineering Pathway: E2.0, E3.0, E5.0, E5.1, E5.3, E5.6, E5.7, E9.0	*=writing assignment, **=reading assignment, ***=technology based, != career focus, Q=quiz, T=Test, R=Research 1. Use the city of Chicago case study to analyze the public health problems created by extreme pollution and proposed solutions. They will further analyze how this model may have created a better health for the community and quality of life.**, * 2. Individually research health issues that have resulted from the areas of air pollution, water pollution, poor waste management, and overpopulation. They will use their research to share with a small group potential disease hazards and potential solutions. 3. Question and Answer session with OC department of health officials about types of issues seen in our community ., *! 4. Analyze case studies of cities that are trying to correct these types of pollution through Google Earth ***, T 5. Careers in Community Health and Sustainability: Panel Discussion 6. Reading: Policy Briefing from Health in the Green Economy series, World Health Organization http://www.who.int/hia/green_economy/en/index.htm ! Students will read a policy briefing related to Health in the Green Economy and write a summary of the briefing, using summary guidelines provided in class * and ** 7. Research and write an essay. Essay: Our Responsibility to Future Generations: What Are the Health Co-Benefits of Climate Change Reduction Policies? (3-5 page essay) * and **	See above, plus: • http://www.choosclimate.org • HUD Office of Sustainable Housing and Communities http://www.hud.gov/sustainability • EPA Office of Sustainable Communities http://www.epa.gov/smartgrowth/osc/index.htm • EPA Office of Environmental Justice http://www.epa.gov/compliance/environmentaljustice/index.html • Movie: Erin Brokovitch, Flow

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

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Differentiation	Support -- for students who are struggling with the content	Content: Reading assignments will be modified to fit students' needs Process: Extended time, scaffolded instructions, partner work, peer tutoring, modified assignments Product: See "Model Tasks" – many products include elements of student choice and personalization such as topic, artistic design, lab design, and mode of presentation. Students can study similar topics at varying degrees of depth and complexity. End products will also be modified to fit students' needs		
	Extension – for high achieving students.	Content: Modified reading assignments, more in depth research into given topics Process: Extension activities, autonomous investigation, independent research, modified assignments Product: See "Model Tasks" – many products inherently contain elements for building depth for high achieving students, including more rigorous experimental design elements and greater detail and mastery of content for projects		
Evaluation	Formative Assessments (ongoing & mid-lesson): Periodic checking for understanding; progress checks for projects; worksheets; submission of research summaries; student surveys; ePortfolio progress checks; and internship progress checks			
	Summative Assessments (unit final evaluation): Research and write an essay. Essay: Our Responsibility to Future Generations: What Are the Health Co-Benefits of Climate Change Reduction Policies?			

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

Course Title	<i>Green Urban Design and Technology</i>	Course Code	<i>R0403-R0404</i>
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Unit 7	5 weeks			
	Key Vocabulary	Standards (referenced)	Model Tasks	Tools / Texts
Sustainable Urban Planning Policy Smart Growth	<i>smart growth</i> <i>modernist planning</i> <i>spatial planning</i> <i>compact city</i> <i>new urbanism</i> <i>governance</i> <i>ownership</i> <i>zoning</i> <i>“green” agenda</i> <i>“brown” agenda</i> <i>sense of place</i> <i>eco-efficiency</i> <i>mobility</i> <i>management</i> <i>photosynthetic spaces</i> <i>planning</i> <i>informality</i> <i>urban blight</i> <i>slums</i>	<i>Social Studies Chronological and Spatial Thinking: 1, 2, and 4</i> <i>Research, Evidence, and Point of View: 1 and 4</i> <i>Content Standards: 11.8, 11.8.6, 11.8.7, 11.11.5</i> <i>Biological Science Standards: 6.c, 6.d, 7.b, 8</i> <i>Investigation and Experimentation: 1, 1.d, 1.h, 1.i, 1.m</i> <i>CTE Foundation Standards: 2.2 (1.6), 2.3, 2.4, 3.0 (3.1-3.7), 4.0 (4.1-4.3), 5.0 (5.1-5.3)</i> <i>Energy, Environment, and Technology Pathway: B1.0, B2.0, B3.0, B4.0</i> <i>Environmental and Natural Science Engineering Pathway: E2.0, E3.0, E5.0, E5.1, E5.3, E5.6, E5.7, E9.0</i>	<i>*=writing assignment, **=reading assignment, ***=technology based, != career focus, Q=quiz, T=Test, R=Research</i> <i>Learn how professional urban designers come to understand the context for the community for which they will develop a green urban design * and **</i> <i>Learn how professional urban designers work with all community stakeholders to explore the possibilities of potential, community-specific green urban designs *, **</i> <i>Learn how professional urban designers develop their actual green urban designs (includes processes and tools of the urban design professional *, **</i> <i>Analyze major advocacy groups and laws surrounding urban planning. **, *</i> <i>Compare and Contrast various laws that are used in urban planning organizations historically. **, *</i> <i>Read David Karr’s chapter ‘The Three steps of Sustainable Urbanism.’ And ‘The Santa Monica Sustainable City Plan’ and analyze through writing how Santa Monica did and did not achieve its goal of sustainability. ** and *</i> <i>Use the tools from Karr’s steps of sustainability to assess how the community was designed, and how it should be altered in the future to make it more sustainable ** and *</i> <i>Ask questions of an environmental lawyer who will visit the class to discuss urban planning restrictions. T Students will take notes and write a summary of his presentation. * and **</i> <i>Read and discuss a United Nations Habitat report on “Planning Sustainable Cities: Policy Decisions,</i>	<i>See above, plus:</i> <i>http://www.unhabit.at.org/downloads/docs/GRHS2009Abridged.pdf (84 pages)</i> <i>full report: http://www.unhabit.at.org/grhs/2009</i> <i>Urban Design Simulations and learning “games” on the web:</i> <i>Community Planning Website (United Kingdom) http://www.communityplanning.net/</i> <i>Lincoln Institute of Land Policy (U.S.), Building Blocks – A Density Game</i> <i>http://www.lincolns.t.edu/subcenters/visualizing_density/lockgame/index.aspx</i> <i>My Sust House – creating a sustainable environment and a sustainable house http://mysusthouse.org/</i>

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

Course Title		Green Urban Design and Technology		Course Code	R0403-R0404
			<i>Global Report on Human Settlements 2009,” which assesses the effectiveness of urban planning as a tool for dealing with the challenges facing 21st century cities and for enhancing sustainable urbanization. Students will analyze the policy recommendations regarding a new role for urban planning in building a sustainable world. **</i> <i>10. Working in small groups, students will “interrogate the text” of an assigned section of the report, carefully and strategically reading the assigned text, and preparing a classroom presentation regarding key ideas and their relevance to urban planning in Southern California. **, ***, *</i>		
Differentiation	Support -- for students who are struggling with the content	Content: Reading assignments will be modified to fit students' needs Process: Extended time, scaffolded instructions, partner work, peer tutoring, modified assignments Product: See “Model Tasks” – many products include elements of student choice and personalization such as topic, artistic design, lab design, and mode of presentation. Students can study similar topics at varying degrees of depth and complexity. End products will also be modified to fit students' needs			
	Extension – for high achieving students.	Content: Modified reading assignments, more in depth research into given topics Process: Extension activities, autonomous investigation, independent research, modified assignments Product: See “Model Tasks” – many products inherently contain elements for building depth for high achieving students, including more rigorous experimental design elements and greater detail and mastery of content for projects			
Evaluation	Formative Assessments (ongoing & mid-lesson): Periodic checking for understanding; progress checks for projects; worksheets; submission of research summaries; student surveys; ePortfolio progress checks; and internship progress checks				
	Summative Assessments (unit final evaluation): <i>Working in small groups, students will “interrogate the text” of an assigned section of the United Nations Habitat report on “Planning Sustainable Cities: Policy Decisions, Global Report on Human Settlements 2009,” carefully and strategically reading the assigned text, and preparing a classroom presentation regarding key ideas and their relevance to urban</i>				

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

Course Title	<i>Green Urban Design and Technology</i>	Course Code	<i>R0403-R0404</i>
	<i>planning in Orange County</i>		

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

Course Title	<i>Green Urban Design and Technology</i>	Course Code	<i>R0403-R0404</i>
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Unit 8	4 weeks			
	Key Vocabulary	Standards (referenced)	Model Tasks	Tools / Texts
Intro to GIS Technology Coordinate Systems Latitude and Longitude Geographic Projections GPS Databases	Geographic Information Systems site situation land use natural resources coordinate systems latitude longitude geographic projections scale global positioning systems remote sensing map raster data vector data point line polygon topography geology spatial data database dataframe contours digital elevation models	<i>Social Studies Chronological and Spatial Thinking: 1, 2, and 4</i> <i>Research, Evidence, and Point of View: 1 and 4</i> Content Standards: 11.8, 11.8.6, 11.8.7, 11.11.5 <i>Biological Science Standards: 6.c, 6.d, 7.b, 8</i> <i>Investigation and Experimentation: 1, 1.d, 1.h, 1.i, 1.m</i> CTE Foundation Standards: 2.2 (1.6), 2.3, 2.4, 3.0 (3.1-3.7), 4.0 (4.1-4.3), 5.0 (5.1-5.3) <i>Energy, Environment, and Technology Pathway: B1.0, B2.0, B3.0, B4.0</i> <i>Environmental and Natural Science Engineering Pathway: E2.0, E3.0, E5.0, E5.1, E5.3, E5.6, E5.7, E9.0</i>	*=writing assignment, **=reading assignment, ***=technology based, != career focus, Q=quiz, T=Test, R= Research 1. Get an introduction to fundamentals of GIS and their application in mapping urban patterns. *, ** 2. Demonstrate their understanding of how to map various elements and layers of society including green businesses, asthma rates, LEED certified buildings, and bicycle paths., T 3. Analyze GIS Careers in the news: Students read an interview with a GIS Technology expert regarding career futures and GIS knowledge. http://www.americansentinel.edu/blog/2011/08/02/gis-technology-expert-discusses-industry-career-fields-and-future-job-market/ (note published on an Information Technology blog associated w. American Sentinel University) 4. Students create a map of a local site of relevance, including labels, amenities, point of interest, and landmarks Maps are displayed and presented to the class for peer critiques.	See above, plus: • Article: "GIS: An Integrating Technology," Kenneth E. Foote and Margaret Lynch, University of Colorado at Boulder, 2009 (revised from 2000 edition) http://www.colorado.edu/geography/gcraft/notes/intro/intro_f.html • "Geographic Information Systems," USGS, (detailed "on line poster" http://egsc.usgs.gov/isb/pubs/gis_poster/) • "GIS in the Cloud: The New Age of Cloud Computing and Geographic Information Systems," Victoria Kouyoumjian • http://www.esri.com/library/ebooks/gis_in-the-cloud.pdf (free online publication, 30 pp.) • "What is GIS," Caitlin Dempsey, GIS Lounge http://gislounge.com/what-is-gis/

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

Course Title		Green Urban Design and Technology	Course Code	R0403-R0404
Differentiation	Support -- for students who are struggling with the content	Content: Reading assignments will be modified to fit students’ needs Process: Extended time, scaffolded instructions, partner work, peer tutoring, modified assignments Product: See “Model Tasks” – many products include elements of student choice and personalization such as topic, artistic design, lab design, and mode of presentation. Students can study similar topics at varying degrees of depth and complexity. End products will also be modified to fit students’ needs		
	Extension – for high achieving students.	Content: Modified reading assignments, more in depth research into given topics Process: Extension activities, autonomous investigation, independent research, modified assignments Product: See “Model Tasks” – many products inherently contain elements for building depth for high achieving students, including more rigorous experimental design elements and greater detail and mastery of content for projects		
Evaluation	Formative Assessments (ongoing & mid-lesson): Periodic checking for understanding; progress checks for projects; worksheets; submission of research summaries; student surveys; ePortfolio progress checks; and internship progress checks			
	Summative Assessments (unit final evaluation): Students create a map of a local site of relevance, including labels, amenities, point of interest, and landmarks Maps are displayed and presented to the class for peer critiques			

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

Course Title	<i>Green Urban Design and Technology</i>	Course Code	<i>R0403-R0404</i>
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Unit 9	4 weeks			
	Key Vocabulary	Standards (referenced)	Model Tasks	Tools / Texts
Green Urban Design and Technology Capstone Project	<i>no new vocabulary will be introduced during this unit</i>	<i>Social Studies Chronological and Spatial Thinking: 1, 2, and 4</i> <i>Research, Evidence, and Point of View: 1 and 4</i> <i>Content Standards: 11.8, 11.8.6, 11.8.7, 11.11.5</i> <i>Biological Science Standards: 6.c, 6.d, 7.b, 8</i> <i>Investigation and Experimentation: 1, 1.d, 1.h, 1.i, 1.m</i> <i>CTE Foundation Standards: 2.2 (1.6), 2.3, 2.4, 3.0 (3.1-3.7), 4.0 (4.1-4.3), 5.0 (5.1-5.3)</i> <i>Energy, Environment, and Technology Pathway: B1.0, B2.0, B3.0, B4.0</i> <i>Environmental and Natural Science Engineering Pathway: E2.0, E3.0, E5.0, E5.1, E5.3, E5.6, E5.7, E9.0</i>	<i>*=writing assignment, **=reading assignment, ***=technology based, != career focus, Q=quiz, T=Test, R= Research</i> <i>Analyze one major issue within Southern California. (Themes for student groups include: building, transportation, public spaces, business, and health) Students will write a summary of research findings. *, **, ***</i> <i>Use their GIS skills and Google Earth to map the issue and propose steps towards a sustainable future. ***</i> <i>Utilize their knowledge and skills as urban designers to create an urban design prototype of their choice. Students will follow professional urban planning processes and protocols in order to render an effective design.</i> <i>Use the technology tools of the Smartboard, Sketchup, and PowerPoint to create a professional presentation of their findings to one representative from the community. *!</i> <i>Complete an urban design project that addresses a real urban design challenge in the community. Students will follow all elements of a professional urban design process. They will work with urban design mentors and will present their final Urban Design projects to an audience of community, civic, professional, and postsecondary stakeholders. Students will be assessed using a project rubric.</i>	<i>See above, plus:</i> <i>International Association for Public Participation: http://www.iap2.org</i> <i>National Charrett Institute: The Charrette Handbook http://www.charreteinstitute.org/programs/charrette_handbook.html</i> <i>National Park Service (NE Region Philadelphia Office) community toolbox, description on charettes http://www.nps.gov/phso/rtcatooolbox/gatherings_charettes.htm</i> <i>SmartGrowth Toolkit, British Columbia, Community Design Charettes http://66.51.172.116/Portals/0/Downloads/J1_ToolkitPart_III.pdf</i> <i>The Architecture Foundation: http://www.architecturefoundation.org.uk/creativespaces/cs.html (participatory urban design)</i> <i>Community Planning Website, United Kingdom http://www.communityplanning.net/</i> <i>Western Australia Planning Commission, The Enquiry-by-Design Workshop Process, 2003 http://www.wapc.wa.gov.au/Publications/28.aspx</i>

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

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	Extension – for high achieving students.	Content: Modified reading assignments, more in depth research into given topics Process: Extension activities, autonomous investigation, independent research, modified assignments Product: See "Model Tasks" – many products inherently contain elements for building depth for high achieving students, including more rigorous experimental design elements and greater detail and mastery of content for projects		
Evaluation	Formative Assessments (<i>ongoing & mid-lesson</i>): Periodic checking for understanding; progress checks for projects; worksheets; submission of research summaries; student surveys; ePortfolio progress checks; and internship progress checks			
	Summative Assessments (<i>unit final evaluation</i>): <i>Complete an urban design project that addresses a real urban design challenge in the community. Students will follow all elements of a professional urban design process. They will work with urban design mentors and will present their final Urban Design projects to an audience of community, civic, professional, and postsecondary stakeholders. Students will be assessed using a project rubric.</i>			

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

Course Title	<i>Green Urban Design and Technology</i>	Course Code	<i>R0403-R0404</i>
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Unit 10	Length of Unit ... (Days / weeks / class sessions) ...			
	Key Vocabulary	Standards (referenced)	Model Tasks	Tools / Texts
<i>[Title]</i> <i>[Subtopics]</i>				
Differentiation	Support -- for students who are struggling with the content	Content: Process: Product:		
	Extension – for high achieving students.	Content: Process: Product:		
Evaluation	Formative Assessments (ongoing & mid-lesson):			
	Summative Assessments (unit final evaluation):			

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

Course Title	<i>Green Urban Design and Technology</i>	Course Code	<i>R0403-R0404</i>
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