**Course-Level Sustainability Learning Outcomes**

 **\* ARDR 2180-Site Analysis**

Students completing this course will:

Upon successful completion of this course, the student will level be able to:

1. Understand and identify concepts and standards of site drawings

2. Prepare site plans using Computer Aided Drafting with basic skill levels to industry standards.

3. Understand concepts of site layouts including 1 or more site plans using the principles of zoning requirements and other city standards.

This course requires students to be familiar with various environments and instructors often use CNM Campus as a Living Lab (a sustainability initiative) for site analysis.

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| **AUTC 2250 Transportation Alternative Fuels****Learning Outcomes:** |  |
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|  | 1. Describe the history of petrochemical-based transportation in The United States.2. Describe the environmental impact of petrochemical-based transportation.3. Describe the issues relating to U. S. dependence on foreign sources of oil.4. Describe the efforts to legislatively address air quality and oil consumption at the federal, state and local levels.5. Define the term, alternative Fuel.6. Describe the production, handling, infrastructure requirements, advantages, and disadvantages of each of the following transportation fuel options:7. Gaseous fuels (LPG and Natural Gas).8. Alcohol and synthetic fuels.9. Biodiesel fuels.10. Dedicated electric vehicles.11. Hybrid electric vehicles.12. Hydrogen-powered vehicles.13. Discuss the appropriateness of pursuing alternative power for transportation as a national agenda.14. Fuel cell vehicles.15. Describe the near-term actions that must occur to support an alternative power agenda within The United States and globally.16. Describe the issues relating to the present and future global oil supplies. |

**BA 2284 STRATEGIC MANAGEMENT** |  |
| **Learning Outcomes:**

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| 1. Explain the strategic management process.2. Describe the importance of business ethics in strategic management3. Describe strategic mission and vision and their value.4. Define sustained competitive advantage.5. Explain the advantages and disadvantages of entering global markets.6. Identify key sources of external information7. Describe the internal environment and the integration of strategy and organizational culture.8. Explain the differences among business strategies.9. Define cooperatives strategies and explain why firms use them. 10. Define organizational structure and governance. Describe the different levels of strategies. 11. Describe strategic management in nonprofit, government, and small organizations.12. Describe the 21st century competitive landscape and the role of sustainability, globalization and technology. 13. Prepare and present a written strategic management case analysis. |
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**BIO 1110: Environmental Science**

**Outcome #1: Use the scientific method to solve hypothetical environmental problems.**
1. Identify and describe the steps of the scientific method and give examples of each step for hypothetical environmental problems.
2. Describe how to use the scientific method to determine cause and effect relationships in environmental issues.
3. Describe how use of the scientific method could change the way man responds to environmental problems.
4. Discuss other factors besides scientific principles which should be considered when solving environmental problems.
**Outcome #2: Evaluate the components of the biosphere.**
1. Describe the components of the biosphere.
2. Explain the relationships of food and energy for the biosphere components.
3. Explain the pathways of relevant chemical elements through the components of the biosphere (Biogeochemical Cycles).
4. Explain the relationship of the Law of the Conservation of Matter and the pathways of chemical elements through the biosphere.
**Outcome #3: Apply the major principles of ecology to environmental issues.**
1. Explain the relationship of issues related to resource use to the Law of Conservation of Matter and Biogeochemical Cycles.
2. Diagram the pathway of energy through the biosphere (Laws of Thermodynamics).
3. Explain the relationship of the Laws of Thermodynamics to issues related to energy and resource use.
**Outcome #4: Explain man’s impact on the ecological characteristics of the biosphere.**
1. Formulate ecological solutions to the problems discussed in class.
2. Discuss solutions to energy and materials shortages.
3. Discuss solutions to soil depletion and agricultural production.
4. Discuss solutions to forestry problems.
5. Discuss solutions to land and water pollution.

**BIO 1192 Environmental Science Lab**

**Outcome #1: Use the scientific method to solve hypothetical environmental problems.**
1. Identify and describe the steps of the scientific method and give examples of each step for hypothetical environmental problems.
2. Describe how to use the scientific method to determine cause and effect relationships in environmental issues.
3. Describe how use of the scientific method could change the way man responds to environmental problems.
4. Discuss other factors besides scientific principles which should be considered when solving environmental problems.
**Outcome #2: Evaluate the components of the biosphere.**
1. Describe the components of the biosphere.
2. Explain the relationships of food and energy for the biosphere components.
3. Explain the pathways of relevant chemical elements through the components of the biosphere (Biogeochemical Cycles).
4. Explain the relationship of the Law of the Conservation of Matter and the pathways of chemical elements through the biosphere.
**Outcome #3: Apply the major principles of ecology to environmental issues.**
1. Explain the relationship of issues related to resource use to the Law of Conservation of Matter and Biogeochemical Cycles.
2. Diagram the pathway of energy through the biosphere (Laws of Thermodynamics).
3. Explain the relationship of the Laws of Thermodynamics to issues related to energy and resource use.
**Outcome #4: Explain man’s impact on the ecological characteristics of the biosphere.**
1. Formulate ecological solutions to the problems discussed in class.
2. Discuss solutions to energy and materials shortages.
3. Discuss solutions to soil depletion and agricultural production.
4. Discuss solutions to forestry problems.
5. Discuss solutions to land and water pollution.

**BIO 2410: Ecology and Evolution and BIO 2492 Ecology and Evolution Laboratory**

**Outcome #9: Examine the basic principles of ecology.**
1. Describe the interactions between organisms and their environment and how that makes the distribution of species.
2. Explore the scope of ecological research from organismal to global ecology.
3. Link ecology and evolutionary biology.
4. Describe both biotic and abiotic limiting factors of ecosystems.
5. Compare terrestrial and aquatic biomes and their specific defining characteristics.
**Outcome #10: Investigate the genetic basis of behavior.**
1. Describe how discreet sensory inputs can stimulate both simple and complex behaviors.
2. Describe how learning establishes specific links between experience and behavior.
3. Describe how both genetic make-up and environment contribute to development of behaviors.
4. Discuss altruistic behavior in the context of inclusive fitness.
**Outcome #11: Describe the ecology of populations.**
1. Explain why population density, dispersion, and demographics are influenced by dynamic biological processes.
2. Describe the research that demonstrates population dynamics.
3. Relate the effects of natural selection to population dynamics.
4. List the factors that regulate population growth.
5. Explain why human population can be said to have experienced ecological release.
**Outcome #12: Describe communities.**
1. Diagram the trophic levels of given communities.
2. Describe how dominant and keystone species influence community structure.
3. Contrast bottom-up and top-down controls on ecosystem structure.
4. Examine how species diversity and composition relates to resilience in ecosystems.
5. Describe ecological succession.
**Outcome #13: Examine energy flow and nutrient cycling in ecosystems.**
1. Examine the physical laws that govern energy flow and chemical cycling in ecosystems.
2. Discuss the global energy budget.
3. Relate primary productivity to the health of terrestrial ecosystems.
4. Examine the water cycle, the carbon cycle, the terrestrial nitrogen cycle, and the phosphorus cycle.
5. Contrast decomposition rates of various ecosystem types.
6. Discuss how human activities now dominate most chemical cycles on earth.

**\*BIO 2492**

**\*CHEM 1010**

**\*CHEM 1092**

**CJ 2505- Community-Oriented Policing**

\* Describe the history of police-community relation

\* Describe our state of knowledge of the police impact on crime

\* Identify the strategic approach with the most evidence for effectiveness

\* Cite the primary components of an appropriate model of community policing

· Explain why police officers typically place a higher importance upon traditional crime control than do citizens

· Explain the difficulties in measuring community policing outcomes

· Cite the reasons why neighborhood deployment is necessary

· Distinguish community policing from problem solving

· Describe the “Three Citizens model”

· Understand the pros and cons of the SARA model.

· Identify the five critical components necessary to make an effective crime strategy

· List six enforcement approaches commonly employed by police agencies

· Define a crime hot spot

· Explain why the police should avoid indiscriminate use of consent to search authorization

· Explain Broken Windows Theory

· List the components of Compstat as a broad approach to crime control · Explain why targeting known repeat offenders has seldom been successful

· Identify allocation of staffing resources to core agency functions

· Explain the relationship between Compstat and Community Policing

· Identify the factors that must be considered in patrol deployment

· Describe why research replication is an important element in the development of police science.

[**CST 1150 - Introduction to Cultural Studies**](http://catalog.cnm.edu/preview_course_nopop.php?catoid=13&coid=27910)

• Apply fundamental ideas from cultural studies to their environment and experience

• Contextualize information from culture using concepts and language from cultural studies.

• Recognize cultural studies’ contribution to significant and historical developments.

• Identify four theories that are guiding today’s cultural development.

**CST 1182-Environment, Science & Technology**

Describe the social construction of such concepts as “environment,” “science,” and “technology”

 ~Identify cultural assumptions underlying notions of scientific

 progress, environment, green, sustainability ~Explain how concepts of gender, race, sexuality, disability and class form and are formed by environment, science and technology.

 Outline the roles of environment, science and technology in the

 creation of political and economic policies

**\* CRP 1165-Introduction to Community and Regional Planning**

**CRP 1181-Introduction to Environmental Problems**

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| Upon successful completion of this course, the students will be able to: |
| 1. • Identify and describe the underlying factors that shape the environmental planning and policy |
| 2. • Describe the major environmental planning-related issues associated with specific environmental topics such as: environmental justice, air quality, water quality and wastewater management, climate change, disaster planning, energy planning, the built and natural environment, conservation development, low impact and green development |
| 3. • Describe, analyze and evaluate policies and programs used by planners to address environmental challenges and promote sustainable development |

**\* CRP 2265-Sustainable Community Planning Methods**

**\***[**ECON 2201 - Microeconomics**](http://catalog.cnm.edu/portfolio_nopop.php)

* Describe the basic economic problem of scarcity and calculate opportunity cost, given information on production.
* Graph supply & demand curves and use supply & demand analysis to predict how changes in the world affect equilibrium prices and quantities in competitive markets.
* Analyze the impact of price controls on consumer and producer welfare.
* Calculate the price elasticity of demand and use information on elasticity to predict how a change in price will affect the quantity demanded.
* Distinguish between the 4 basic types of market structure: perfect competition, monopoly, oligopoly, and monopolistic competition.
* Use information on production costs to predict how a profit maximizing firm will behave in different market structures.

**\***[**FS 2103 - Hazardous Materials II**](http://catalog.cnm.edu/portfolio_nopop.php)

**GEOG 1101 Physical Geography**

**Learning Outcomes**

1. Define Cartography, differentiate between map scales and describe map essentials.
2. Identify and describe general processes of weather and climate, including major and minor atmospheric disturbances.
3. Critically discuss global warming/climate change issues.
4. Illustrate the hydrosphere.
5. Integrate climate, soils and the biosphere.
6. Describe the rock cycle.
7. Apply plate tectonics theory to global distributions.
8. Differentiate landforms of arid lands, karst topography, glaciated regions, coastal areas, and lands created by fluvial processes.

**Geography 1950 Environmental Issues**

1. Survey major environmental issues facing humankind on global, regional and local scales
2. Evaluate the scientific method and its role in societies across the globe as it applies to the conflict between environment and society
3. Explain environmental systems and the services they provide for humans and other organisms
4. Evaluate economic worldviews and their impact on the environment
5. Analyze the concept of sustainability and its implications in both urban and rural settings
6. Develop effective communication skills over major environmental issues

[**GNHN 2211 - Utopian and Dystopian Thought**](http://catalog.cnm.edu/portfolio_nopop.php)

* Describe the major events and text in dystopian literature
* Analyze primary texts
* Apply theories of dystopia to our own world
* Demonstrate the connection between dystopian concerns and environmentalism

**ECON 2203 Society and the Environment**

**Learning outcomes:**

1. Describe historical patterns and trends of resource use and pollution creation for the US and the world.
2. Apply the concept of environmental externalities to a variety of real world situations. Analyze specific examples of pollution and evaluate policies aimed at reducing pollution.
3. Compare and contrast different policies for pollution reduction, including taxes, tradable permit systems, and direct regulatory approaches, with respect to both costs and effectiveness.
4. Identify common property resources and use information on extraction costs and market demand to predict outcomes and devise policies to improve outcomes.
5. Describe the scientific evidence of climate change, summarize current global and national climate change policies and evaluate proposed policies with respect to effectiveness and cost.
6. Study one environmental issue in depth, applying a variety of the tools developed in this class to explaining the issue. Produce a written research paper.

**ELTR 1220**

The student will demonstrate and/or describe the function of the following tasks to a minimum accuracy of at least 70%:

a.    Jobsite safety procedures

b.    Trade materials and tools used by an electrician

c.    Single-pole, 3-way and 4-way switching circuits

d.    Heating and cooling system circuits

e.    Door-chime circuits

f.     Residential and light commercial branch-circuits

g.    Overcurrent protection

h.    Blueprint applications

i.      NEC applications

j.      Service Learning Project:

·         The Service Learning component will consist of residential wiring projects for Greater Albuquerque Habitat for Humanity (GAHH). The projects will be supervised by the instructor and the GAHH supervisor. Students will be required to adhere to the Student Code of Conduct while at the site and be respectful of the diversity of workers and environments. Students will be graded on participation, skill application and work ethics.

ELTR 1230

Students completing this course will:

1.   The student will demonstrate and/or describe the function of the following tasks to a minimum accuracy of at least 70%:

a.    Pipe bending calculations and techniques

b.    Overhead and Underground service installations

c.    Main panel installation and replacement

d.    Sub panel installation and replacement

e.    NEC, State, and local utility compliance

Service Learning Project:

The Service Learning component will consist of residential wiring projects for Greater Albuquerque Habitat for Humanity (GAHH). The projects will be supervised by the instructor and the GAHH supervisor. Students will be required to adhere to the Student Code of Conduct while at the site and be respectful of the diversity of workers and environments. Students will be graded on participation, skill application and work ethics.

ELTR 2620

1.    Compare the advantages and disadvantages of installing a PV system.

2.    Evaluate the design priorities for PV systems in different types of applications.

3.    Identify the factors affecting the quantity and composition of solar energy received on Earth’s surface.

4.    Identify the factors affecting the sun’s apparent position and path through the sky.

5.    Calculate differences between solar time and standard time.

6.    Evaluate how array orientation affects solar energy received by modules.

7.    Demonstrate how solar radiation data is used in sizing and estimating PV system performance.

8.    Identify factors to consider in preliminary assessment such as solar resource, environmental conditions, building code and utility requirements.

9.    Explain the process of determining potential array locations.

10. Describe methods for determining and diagramming shading patterns.

11. Discuss considerations in determining the suitability and condition of existing roofing, structural systems, and electrical systems and equipment.

12. Explain the function of an energy audit and identify opportunities for conservation and energy efficiency.

13. Identify the principal functions and features of charge controllers.

14. Identify concerns and requirements for charge controller applications and installation.

15. Identify the requirements for PV systems operating without charge control.

**GEOG 1102: Human Geography**

**Learning Outcomes:**

1. investigate the basic concepts of human geography
2. identify spatial distribution of cultural characteristics and use them to analyze world problems such as ethnic and political conflict, urbanization, development, population, migration, and resource issues.

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| **HT 1101:**  | **INTRODUCTION TO TOURISM \*HWPS** |
|  **Learning**  | **Outcomes:** |
|  | 1. Research the different types and availability of prospective careers in the tourism industry.2. Summarize the history and evolution of hospitality and tourism.3. Describe the importance of segmenting the tourism market.4. Evaluate and analyze quality customer services.5. Examine ethics in the hospitality industry.6. Identify the role of transportation in the hospitality industry.7. Describe the impact of airline deregulation on the hospitality and tourism industry.8. Identify and describe the major classifications of accommodations.9. Compare and contrast organizational structures of hospitality organizations including the brigade system.10. Analyze the various operations in the food and beverage sector.11. Examine the importance of the menu, production and service in food and beverage operations. 12. Evaluate the economic impact of casinos, convention centers, events, entertainment and attractions.13. Illustrate the similarities and differences between resorts, destinations and cruises. 14. Identify organizations that promote tourism.15. Analyze the economic and political impact of tourism.16. Analyze the social and cultural impact of tourism.17. Describe emerging trends and technology that will impact the future of hospitality and tourism.18. Differentiate between mass tourism and ecotourism
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\*[**HVAC 1420 - Energy Efficiency & Green Building Standards I**](http://catalog.cnm.edu/portfolio_nopop.php)

**Ratio of exterior surface area to conditioned area smaller for multifamily than single-family:**

•         Fewer walls/ceilings/floors exposed to outdoors

•         Interior gains dominate

•         Wall assemblies treated same as with single family – but often more complicated external loads – always remember building orientation using Manual J and D

•          HVAC and Domestic Hot Water

**Ventilation**

•          Redesign ventilation system

•          Balance system

•          Install constant air regulators

•          Seal ducts and seal all around exhaust and supply ducts

•          Replace fixed speed ventilation fans w/ variable speed

**Lighting**

•          Replace w/ more efficient (proper types, proper ballasts)

•          Install controls (timers, motion sensors, dimmers)

**Lighting must include common areas (Lighting loads for common areas):**

•          Lobby = 1.3 Watts/square foot

•          Corridors = 0.5 W/sf

•          Stairs = 0.6 W/sf

•          Garage = 0.3 W/sf

•          Optimize lighting fixture orientation

**Duct testing**

•          Operate duct blaster equipment and describe the results

•          Complete the forms for evaluation

•          Present a solution from the results

**NS 2010: Natural Science for Teachers**

**Learning Outcomes:**

1. Examine major water issues.
2. Identify specific types of water pollutants.
3. Discuss water cycle.
4. Contrast different methods of water conservation.
5. Determine the relationships between components of an ecosystem.
6. Identify components to an ecosystem.
7. Discuss possible disturbances and their causes in an ecosystem.
8. Review the meaning of j-curves and s-curves in animal populations.
9. Analyze problems in food supply issues.
10. Explain the green revolution.
11. Identify food supply issues and their underlying causes.
12. Discuss issues of pesticides and herbicides in the environment.
13. Identify problems in modern day agriculture.
14. Contrast productive and unproductive soils.
15. Examine differences in human population between the developing versus the developed world.
16. List underlying factors that influence family size.
17. Identify possible solutions to growing populations.
18. Discus ecological footprint in the developing versus the developed world.
19. Contrast solutions to ecosystem degradation and human consumption.
20. Contrast solutions to urban sprawl.
21. Identify origins of urban sprawl.
22. Define sustainability.
23. Discuss the five principles of sustainability.
24. Distinguish between Neolithic, industrial, and environmental revolutions.
25. Identify environmental impacts of urban sprawl.
26. Contrast global solutions to the energy crisis.
27. Cite differences between renewable and non-renewable energy sources.
28. Identify origins of fossil fuels.
29. Discuss human interest in fossil fuels from a historical perspective.
30. Identify origins of renewable energy sources.
31. Discuss human interest in renewable energy.
32. Examine different solutions for addressing the global decline in biodiversity.
33. Define biodiversity.
34. Differentiate between instrumental value and intrinsic value of species.
35. Identify reasons for decline in biodiversity.

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| **PHIL 2246: ENVIRONMENTAL ETHICS****Learning Outcomes:**

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| 1. [Instructors can add to this list of objectives. Effective course objectives are measurable by the means of assessment stipulated in the next section.] 2. Apply different moral theories to the issues covered in the course3. Learn techniques for moral decision-making in problematic situations4. Critique positions and arguments in contemporary environmental debates5. Learn the factual-scientific basis of contemporary environmental problems |
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\* [**PLMB 1320 - Solar Thermal Systems**](http://catalog.cnm.edu/preview_course_nopop.php?catoid=13&coid=28770)

* Students will be able to identify and use the New Mexico Solar Codes and it relationship to the rest of the New Mexico State Codes.
* Identify and choose different types of solar panels.
* Identify and choose different sizes (GPM Gallon Per Minute and BTU/H British Thermal Units heat load) output capacity.
* Demonstrate how to install panels on given, different types of roofs and ground locations.
* Be able to identify and define internal and external equipment components that make up solar systems.
* Identify piping configurations used to connect panels and component that make up systems.
* Identify and use sizing tables to choose piping size and flow rates.
* Demonstrate an understanding of wiring diagrams used to provide power to operate solar systems.
* Apply knowledge of solar systems service, maintain, repair, replace, and troubleshoot simple solar system trainers

\* [**PLMB 1330 - Energy and Water Conservation Systems**](http://catalog.cnm.edu/preview_course_nopop.php?catoid=13&coid=28771)

Students completing this course will be able to understand alternative energy technologies, energy efficiency methods, energy efficiency investment analysis, geothermal systems, water management and water efficiency methods.

**\* Sustainability 1134**

1. Explain the concept of sustainability using the “3 E’s” and describe examples of successful sustainability initiatives
2. Identify current environmental, social, and economic issues
3. Propose sustainable solutions to current problems by analyzing issues, recognizing multiple stakeholders, and evaluating likely outcomes
4. Apply course concepts and promote sustainability in the community by engaging with sustainability-related organizations within the Albuquerque area and on CNM campuses