ESC 1100. The Geosphere: Physical and Historical Geology. 3 Hours.
Examines the dynamic processes that continually create the Earth. Examines the internal structure, resulting tectonic movements, volcanism and seismic activity, rock and mineral genesis, and chemical and physical weathering shaping Earth’s surface through time. Stresses the scientific basis for our understanding of the physical earth.

ESC 1150. The Atmosphere. 3 Hours.
Examines Earth’s atmospheric structure and applies laws of physics to describe and explain broad climate and circulation patterns and local weather events that maintain or can disrupt ecosystems as heat energy and water move through Earth’s spheres.

ESC 1200. The Hydrosphere: Oceanography, Ground and Surface Water. 3 Hours.
Examines the physical structure, biological provinces, and varying chemistries of Earth’s ocean and other water resources. Topics range from El Nino/Southern Oscillation to lake eutrophication.

ESC 1250. The Environment and Society. 3 Hours.
Surveys Western attitudes toward the natural world, the development of the conservation movement, environmental crisis of the 20th century, and the sustainability movement. Investigates how environmental degradation and protection efforts differentially affect various social groups. Examines political, economic, and social trends that frame current policy debates. The backdrop of broader societal trends such as urbanization, demographic changes, and globalization provide understanding for current legal and policy positions.

ESC 1300. Science, Technology, and Society. 3 Hours.
Examines the nature of scientific inquiry within the social context. Examines the impact of scientific discoveries and technological advances in the context of sustainability. Offers students an opportunity to explore exponential technologies, visions of the future, and the limits of prognostication with respect to their career fields and with an eye to impacts of society in general.

ESC 1990. Elective. 1-4 Hours.
Offers elective credit for courses taken at other academic institutions. May be repeated without limit.

ESC 2100. Planetary Science. 3 Hours.
Covers the origin and context of Earth. Topics include the structure of our solar system, structure of the sun and cycles of solar activity on Earth systems, atmospheric and geologic processes in our solar system, current explorations, and future issues.

ESC 2200. Natural Disasters: Evaluating Risk, Minimizing Loss. 3 Hours.
Integrates material from the core courses regarding a scientific understanding of how the Earth interacts violently with human-created environments. Focuses on actual vs. perceived risk and mitigation techniques.

ESC 2990. Elective. 1-4 Hours.
Offers elective credit for courses taken at other academic institutions. May be repeated without limit.

ESC 3100. Introduction to Geographical Information Systems. 3 Hours.
Offers a hands-on introduction to the use of a geographic information system (GIS). Topics include spatial data collection, data accuracy and uncertainty; cartographic principles and data visualization; geographic analysis; and the legal, economic, and ethical issues associated with the use of a GIS.

ESC 3200. Wetlands Ecosystems. 3 Hours.
Explores biochemical and geochemical processes of wetland environments. Presents the complexity of classification schemata management issues and protection strategies.

ESC 3210. Air, Water, and Life: Pollution. 3 Hours.
Focuses on major pollutants affecting the hydrosphere and atmosphere, their sources, chemical interactions, effects, and mitigation techniques.

ESC 3220. Water on and Underground: Geochemistry and Hydrology. 3 Hours.
Examines biogeochemical cycles affecting freshwater resources, including the fundamentals of aquatic chemistry. Using the principles of hydrology, the movement of water through the Earth system is measured and forecast, especially as it pertains to flooding.

ESC 3230. Soils and Sustainability. 3 Hours.
Discusses the genesis, structure, classification schemes, chemical and biological components, and processes of soils. Explores degradation issues and management of these issues.

ESC 3240. Energy: Sources and Issues. 3 Hours.
Examines carbon fuels, nuclear, wind, solar, and geothermal sources of energy from multiple disciplinary perspectives, including scientific, geopolitical, and economic.

ESC 3250. Urban Ecology. 3 Hours.
Examines urban systems, their processes, and the sustainability movement. Integrates material from the core courses regarding a scientific understanding of how the Earth interacts violently with human-created environments. Presents the complexity of classification schemata management issues and protection strategies.

ESC 3990. Elective. 1-4 Hours.
Offers elective credit for courses taken at other academic institutions. May be repeated without limit.

ESC 4850. Environmental Assessment and Remediation. 3 Hours.
Focuses on the creation of environmental impact statements and plans for remediation. Topics include solid waste management, wastewater treatment, and air pollution.

ESC 4891. Research. 1-4 Hours.
Offers students an opportunity to conduct research under faculty supervision.

ESC 4892. Directed Study. 1-4 Hours.
Offers independent work under the direction of members of the department on a chosen topic.

ESC 4893. Independent Study. 1-4 Hours.
Offers students an opportunity to undertake special research.

ESC 4894. Internship. 1-4 Hours.
Provides students with an opportunity for internship work.

ESC 4895. Practicum. 1-4 Hours.
Provides eligible students with an opportunity for practical experience.

ESC 4896. Experiential Education Directed Study. 1-4 Hours.
Draws upon the student’s approved experiential activity and integrates it with study in the academic major.

ESC 4950. Seminar. 1-4 Hours.
Offers an in-depth study of selected topics.
ESC 4955. Project. 1-4 Hours.
Reviews the theory and practice of environmental permitting and environmental assessment. Topics include major federal and state environmental regulations, the environmental permitting process, risk assessment and management, and environmental compliance. May be repeated without limit.

ESC 4983. Topics. 1-4 Hours.
Offers students the opportunity to apply the principles of environmental science to current topics of concern. Examples may include protection of special biomes and resources, hazardous waste management, energy production and resources, land-use issues, etc. Emphasizes understanding specific problems and the solutions proposed to solve or mitigate them. May be repeated without limit.

ESC 5976. Directed Study. 1-4 Hours.
Offers independent work under the direction of members of the department on a chosen topic.

ESC 5978. Independent Study. 1-4 Hours.
Offers independent work under the direction of members of the department on a chosen topic.

ESC 5984. Research. 1-4 Hours.
Offers students an opportunity to conduct research under faculty supervision.

ESC 6962. Elective. 1-4 Hours.
Offers elective credit for courses taken at other academic institutions. May be repeated without limit.