Earth Science

Physical Geology of Earth's Interior

EARTH 1101 - 4 Credits

Processes important in understanding Earth's interior. Planetary segregation, heat flow, Earth's magnetic field, earthquakes, continental drift, paleomagnetism, seafloor spreading, mantle plumes, and crustal deformation are investigated in light of the unifying theory of plate tectonics. Physical and chemical properties of minerals and the genesis of igneous, sedimentary and metamorphic rocks, and their relationship to the rock and tectonic cycles. Prerequisite: Mathematics 0481 (or college equivalent) with a grade of C or better or qualifying score on the mathematics placement test or a qualifying A.C.T. math score. Course requires Reading Placement Test Score-Category One (3 lecture hours, 3 lab hours)

Physical Geology of Earth's Surface

EARTH 1102 - 4 Credits

Geological processes involved in the creation of a variety of landform systems and sedimentary deposits. Weathering, mass wasting, transport, deposition, depositional environments, sediment lithification, analysis and interpretation of topographic maps, cross-sections, and aerial photographs. Plate tectonic theory, volcanism, and rock and mineral forming processes are integrated. Prerequisite: Mathematics 0481 (or college equivalent) with a grade of C or better or qualifying score on the mathematics placement test or a qualifying A.C.T. math score. Course requires Reading Placement Test Score-Category One (3 lecture hours, 3 lab hours)

Environmental Geology

EARTH 1105 - 4 Credits

A study of the impact of geological processes on society and the environmental consequences of the use of Earth resources by humans. Includes analyses of geologic hazards (including earthquakes, volcanic eruptions, groundwater contamination, flooding) and the attempts made to evaluate and mitigate their risks to human populations. Special attention will be focused on environmental impacts of land-use and economic resource development. Recommended course: Mathematics 0481. Successful completion of high school algebra is assumed. Prerequisite: Course requires Reading Placement Test Score-Category One (3 lecture hours, 2 lab hours)

Introduction to Meteorology

EARTH 1110 - 4 Credits

A first look at various aspects of meteorology, including solar radiation, global circulation, environmental issues, winds, stability, precipitation processes, weather systems and severe weather. Basic physical principles, meteorological terminology, societal impacts, and weather analysis will be explored. Prerequisite: Mathematics 0481 (or college equivalent) with a grade of C

or better or qualifying score on the mathematics placement test or a qualifying A.C.T. math score. Course requires Reading Placement Test Score-Category One (3 lecture hours, 2 lab hours)

Climate and Global Change

EARTH 1111 - 3 Credits

Introduction to the earth's climate, climate change and the interactions between climate and the global environment. Physical, chemical, biological and social factors contributing to climate and global change are investigated. Topics explored are: climate classifications, global warming and greenhouse effect, acid rain, ozone depletion, regional drought and cataclysmic climate change. Man-made climate change as opposed to natural variability, along with human responses to potential climate change are debated. Prerequisite: Mathematics 0481 (or college equivalent) with a grade of C or better or qualifying score on the mathematics placement test or a qualifying A.C.T. math score. Course requires Reading Placement Test Score-Category One (3 lecture hours)

Severe and Unusual Weather

EARTH 1115 - 4 Credits

In-depth study of meteorological phenomena relating to thunderstorms, El Ni¤o/Southern Oscillation events, and tropical storms. Topics will include severe weather spotting, weather radar, atmospheric soundings, tornadogenesis, El Ni¤o, tropical meteorology, hurricanes and an introduction to numerical weather prediction. Basic physical principles, their relation to weather events, and weather's impact on society are also explored. Prerequisite: Mathematics 0481 (or college equivalent) with a grade of C or better or qualifying score on the mathematics placement test or a qualifying A.C.T. math score. Course requires Reading Placement Test Score-Category One (3 lecture hours, 2 lab hours)

Weather Analysis and Forecasting I

EARTH 1116 - 1 Credits

A study of day-to-day weather patterns with an emphasis on understanding the basics of meteorological processes and forecasting. Students learn to read weather reports and weather maps needed to analyze current conditions and forecast weather. Taking advantage of a fully operational weather laboratory, students monitor current weather conditions locally and across the nation. Prerequisite: Course requires Reading Placement Test Score-Category One (2 lab hours)

Weather Analysis and Forecasting II

EARTH 1117 - 1 Credits

Earth Science

A continuation of Weather Analysis and Forecasting I. Students continue investigating sources of data, learn to analyze raw images, and interpret numerical weather forecasts. Taking advantage of a fully-operational weather laboratory, students monitor current weather conditions locally and across the nation. Prerequisite: Earth Science 1116 or equivalent. Course requires Reading Placement Test Score-Category One (2 lab hours)

Weather Impacts and Preparedness

EARTH 1119 - 3 Credits

An investigation of weather and climate impacts that affect various populations within the United States including snow, drought, floods, severe weather, and temperature extremes among other phenomena. Sociological impacts, preparedness, and warning and mitigation strategies will be discussed. (3 lecture hours)

Introduction to Astronomy

EARTH 1120 - 3 Credits

Examines the history of astronomy, observations of astronomical phenomena and concepts, the structure and evolution of the solar system, the birth, life, and death of stars, properties of galaxies and main concepts of cosmology. Provides a basic understanding of matter and radiation. Recommended course: MATH 0481 and successful completion of high school algebra is assumed. Prerequisite: Course requires Reading Placement Test Score-Category One (3 lecture hours)

Astronomy: The Solar System

EARTH 1122 - 4 Credits

An introduction to the solar system using recently available astronomical data. Major topics include scale models, planetary properties, earth-sun relationships, lunar geology, terrestrial planets, jovian planets, natural satellites and ring systems, asteroids, comets, meteoroids, meteors, meteorites, interplanetary space probes and formation theories. Prerequisite: Mathematics 0481 (or college equivalent) with a grade of C or better or qualifying score on the mathematics placement test or a qualifying A.C.T. math score. Course requires Reading Placement Test Score-Category One (3 lecture hours, 3 lab hours)

Astronomy: Stars and Galaxies

EARTH 1124 - 4 Credits

A study of stars, galaxies, deep space objects and cosmology utilizing the latest astronomical discoveries. Major topics include constellations, the Sun, stellar types, motions, parallax, magnitudes, luminosity, spectra, classifications, clusters, evolution, quasars, nebula, galaxy

classification and composition, the Big Bang, inflation and cosmology. Prerequisite: Mathematics 0481 (or college equivalent) with a grade of C or better or qualifying score on the mathematics placement test or a qualifying A.C.T. math score. Course requires Reading Placement Test Score-Category One (3 lecture hours, 3 lab hours)

Observational Astronomy

EARTH 1126 - 4 Credits

An introduction to observation of the heavens with emphasis on angular measurements, use of horizontal and equatorial systems of location, object identification, and classification using data from sidereal time reports, naked eyes, binoculars, optical telescopes, radio telescopes and space telescopes. Use of planisphere, celestial globes, first-hand and robic telescopic data and telescopic tools. Prerequisite: Mathematics 0481 (or college equivalent) with a grade of C or better or qualifying score on the mathematics placement test or a qualifying A.C.T. math score. Course requires Reading Placement Test Score-Category One (3 lecture hours, 3 lab hours)

Introduction to Oceanography

EARTH 1130 - 4 Credits

An introduction to oceanography that focuses on the dominating influence the World Ocean has upon earth processes. Topics include ocean basin evolution, sea water chemistry and physics, interrelationships between the ocean and atmosphere, waves, currents, tides, coastal development, marine communities and human impacts. Prerequisite: Mathematics 0481 (or college equivalent) with a grade of C or better or qualifying score on the mathematics placement test or a qualifying A.C.T. math score. Course requires Reading Placement Test Score-Category One (3 lecture hours, 2 lab hours)

Water Science-Fundamentals of Hydrology

EARTH 1135 - 4 Credits

An introduction to the water cycle, the dynamic processes of surface water, and ground water. Students investigate and analyze the impacts of population growth, urbanization, weather, and climate upon hydrological processes and water resource sustainability. One field trip is required. For any student concerned about water resources and those with intended majors in geology, hydrology, meteorology, environmental sciences/engineering, or resource management. Prerequisite: Mathematics 0481 (or college equivalent) with a grade of C or better or qualifying score on the mathematics placement test or a qualifying A.C.T. math score. Course requires Reading Placement Test Score-Category One (3 lecture hours, 3 lab hours)

Earth Science

Fundamentals of Earth Science

EARTH 1140 - 4 Credits

An introduction to the study of the Earth as a planet. Topics from the disciplines of astronomy, meteorology, oceanography and geology are explored to develop an appreciation of our planet as an integrated system. Includes analyses of the dynamic processes of the Earth's interior, surface, oceans, atmosphere and astronomical surroundings. Prerequisite: Mathematics 0481 (or college equivalent) with a grade of C or better or qualifying score on the mathematics placement test or a qualifying A.C.T. math score. Course requires Reading Placement Test Score-Category One (3 lecture hours, 2 lab hours)

Introduction to Earth Science

EARTH 1141 - 3 Credits

A non-laboratory introduction to the study of the Earth as a planet intended for non-science majors. Topics from the disciplines of astronomy, meteorology, oceanography, and geology are explored to develop an appreciation of our planet as an integrated system. Includes analyses of the dynamic processes of the Earth's interior, surface, oceans, atmosphere, and astronomical surroundings. Students receive credit for either 1140 or 1141 but not both. Prerequisite: Mathematics 0481 (or college equivalent) with a grade of C or better, or qualifying score on the mathematics placement test or a qualifying A.C.T. math score. (3 lecture hours)

Special Project

EARTH 1800 - 1-3 Credits

Special project courses cover topics not otherwise covered by general education courses and other courses in the Catalog for the Earth Science discipline. These courses require direct experience and focused reflection in an in-depth study of a specific earth science topic and/or the critical analysis of contemporary issues in earth science. They are targeted to self-selected students with an interest in the subject matter and involve active participation. The course delivery incorporates an experiential component of no less than 30 percent but not to exceed 70 percent. This experiential component may include field studies, interdisciplinary learning, and/or the practical application of earth science concepts, theories, principles and methods with a specific focus. All courses require an orientation session to deliver academic and experiential information (syllabus, academic requirements, field preparation, logistics, etc.) This course may be taken four times for credit. Prerequisite: Course requires Reading Placement Test Score-Category One

Selected Topics I

EARTH 1820 - 1-3 Credits

Introductory exploration and analysis of selected topics with a specific theme indicated by course title listed in college course schedule. This course may be taken four times for credit as long as different topics are selected. Prerequisite: Consent of instructor is required (1 to 3 lecture hours)

Independent Study

EARTH 1840 - 1-4 Credits

Exploration and analysis of topics within the discipline to meet individual student-defined course description, goals, objectives, topical outline and methods of evaluation in coordination with and approved by the instructor. This course may be taken four times for credit as long as different topics are selected. Prerequisite: Consent of instructor is required. Course requires Reading Placement Test Score-Category One (1 to 4 lecture hours)

Origin and Evolution of the Earth

EARTH 2102 - 4 Credits

Processes and geologic events that are important in understanding the origin and evolution of the earth. Origin of the solar system, planetary segregation, absolute and relative age dating methods, the sedimentary record, evolution of the continents, oceans, and atmosphere. Plate tectonics, crustal evolution and biologic development over the course of geologic time will be a unifying theme. Prerequisite: Earth Science 1101, Earth Science 1102, Earth Science 1130 or Earth Science 1140, all courses require a grade of C or better or equivalent (3 lecture hours, 2 lab hours)

Geologic Field Investigations

EARTH 2103 - 3 Credits

Geologic field investigation involving the stratigraphy, structural geology and economic geology of a selected region within the United States or abroad. Basic methods of geologic field work including rock and outcrop description, sampling methods, measurement of stratigraphic sections, strike and dip measurements, orienteering and map interpretation. A supervised field investigation involving 10 to 14 days of outdoor field work and pre- and post-trip class meetings. Prerequisite: Earth Science 1101, Earth Science 1102 or Earth Science 1140, or equivalent (1 lecture hour, 4 lab hours)

Intermediate Meteorology

EARTH 2110 - 4 Credits

A quantitative first look at the science of meteorology. Physical concepts will be examined using algebraic methods to prepare students for material using higher mathematics. Operational,

physical and dynamical meteorology are discussed to give students an overall understanding of atmospheric science. Equations of motion, thermodynamics and the primitive equations will be among the topics covered. Prerequisite: Mathematics 1431 (or college equivalent) or qualifying score on the mathematics placement test or a qualifying A.C.T. math score and either Earth Science 1110 or Earth Science 1115 or consent of instructor (4 lecture hours)

Mesoscale Meteorology

EARTH 2115 - 4 Credits

In-depth study of meteorological phenomena with short temporal and small spatial scales. Topics will include tools for mesoscale analysis, mesoscale modeling, thermally-forced circulations, fog, mesoscale winter events, and the morphology of convective systems including squall lines, mesoscale convective systems and supercells and their associated threats including flash floods and tornadoes. Other topics of current research interest will also be covered. Prerequisite: Earth Science 1115 or equivalent or consent of instructor (4 lecture hours)

Adv Weather Analysis & Forecasting I

EARTH 2116 - 1 Credits

A continuation of Weather Analysis and Forecasting II, EARTH-1117. Emphasis is on independent analysis of weather events, forecast preparation and mastery of hand data analysis. Taking advantage of a fully operational weather laboratory, students monitor current weather conditions locally and across the nation. Prerequisite: Earth Science 1117 and Mathematics 0481 (or college equivalent) with a grade of C or better, or qualifying score on the mathematics placement test or a qualifying A.C.T. math score (2 lab hours)

Adv Weather Analysis & Forecasting II

EARTH 2117 - 1 Credits

A continuation of Advanced Weather Analysis and Forecasting I. Students prepare a weekly forecast for the Chicago metropolitan area generally and DuPage County specifically, and track and evaluate their forecasting accuracy. Taking advantage of a fully operational weather laboratory, students monitor current weather conditions locally and across the nation. Prerequisite: Earth Science 2116 or equivalent (2 lab hours)

Severe Weather Lab

EARTH 2118 - 2 Credits

An in-depth study of severe weather forecasting and analysis. An emphasis is placed on hand analysis of raw data, assessing short term numerical weather models, and nowcasting. Students

monitor events prior to and during severe weather events using real time radar and other data sources. Students gain a better understanding of severe weather initiation and evolution. Local field trips to observe severe weather first-hand may be included. This course may be taken four times for credit. Prerequisite: Earth Science 1115 with a grade of C or better or consent of instructor (4 lab hours)

Special Project

EARTH 2800 - 1-3 Credits

Special project courses cover topics not otherwise covered by general education courses and other courses in the Catalog for the Earth Science discipline, while building upon academic knowledge and skills acquired in introductory-level Earth Science classes. These courses require direct experience and focused reflection in an in-depth study of a specific Earth Science topic and/or the critical analysis of contemporary issues in Earth Science. They are targeted to self-selected students with an interest in the subject matter and involve active participation. The course delivery incorporates an experiential component of no less than 30 percent but not to exceed 70 percent. This experiential component may include field studies, interdisciplinary learning, and/or the practical applications of more complex earth science concepts, theories, principles and methods with a specific focus. All courses require an orientation session to deliver academic and experiential information (syllabus, academic requirements, field preparation, logistics, etc.) Prerequisite: At least one course in the discipline or consent of the instructor.

Advanced Selected Topics I

EARTH 2820 - 1-3 Credits

Advanced exploration and analysis of selected topics with a specific theme indicated by course title listed in college course schedule. This course may be taken four times for credit as long as different topics are selected. Prerequisite: At least one course in the discipline or consent of instructor. (1 to 3 lecture hours)

Internship (Career & Technical Ed)yCoop Ed/Internship Occup

EARTH 2860 - 1-4 Credits

Course requires participation in Career and Technical Education work experience with onsite supervision. Internship learning objectives are developed by student and faculty member, with approval of employer, to provide appropriate work-based learning experiences. Credit is earned by working a minimum of 75 clock hours per semester credit hour, up to a maximum of four credits. Prerequisite: 2.0 cumulative grade point average; 12 semester credits earned in a related field of study; students work with Career Services staff to obtain approval of the internship by the Associate Dean from the academic discipline where the student is planning to earn credit.

Earth Science

Internship Advanced (Career & Tech Ed)

EARTH 2865 - 1-4 Credits

Continuation of Internship (Career and Technical Education). Course requires participation in Career & Technical Education work experience with onsite supervision. Internship learning objectives are developed by student and faculty member, with approval of employer, to provide appropriate work-based learning experiences. Credit is earned by working a minimum of 75 clock hours per semester credit hour, up to a maximum of four credits. Prerequisite: 2.0 cumulative grade point average; 12 semester credits earned in a related field of study; students work with Career Services staff to obtain approval of the internship by the Associate Dean from the academic discipline where the student is planning to earn credit.

Internship (Transfer)

EARTH 2870 - 1-4 Credits

Course requires participation in work experience with onsite supervision. Internship learning objectives are developed by student and faculty member, with approval of employer, to provide appropriate work-based learning experiences. Credit is earned by working a minimum of 75 clock hours per semester credit hour, up to a maximum of four credits. Prerequisite: 2.0 cumulative grade point average; 12 semester credits earned in a related field of study; students work with Career Services staff to obtain approval of the internship by the Associate Dean from the academic discipline where the student is planning to earn credit.

Internship - Advanced (Transfer)

EARTH 2871 - 1-4 Credits

Continuation of Internship (Transfer). Course requires participation in work experience with onsite supervision. Internship learning objectives are developed by student and faculty member, with approval of employer, to provide appropriate work-based learning experiences. Credit is earned by working a minimum of 75 clock hours per semester credit hour, up to a maximum of four credits. Prerequisite: 2.0 cumulative grade point average; 12 semester credits earned in a related field of study; students work with Career Services staff to obtain approval of the internship by the Associate Dean from the academic discipline where the student is planning to earn credit.