EARTH SCIENCE (EARTH)

EARTH 1101 (P1 907L)
Physical Geology of Earth's Interior
4 Credit Hours
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. (3 lecture hours, 3 lab hours)
Prerequisite: MATH 0465 or MATH 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 Category One.
Course types: Physical Sciences, Physical/Life Science (A.A.S., A.G.S.)

EARTH 1102 (P1 907L)
Physical Geology of Earth's Surface
4 Credit Hours
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. (3 lecture hours, 3 lab hours)
Prerequisite: MATH 0465 or MATH 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 Category One.
Course types: Physical Sciences, Physical/Life Science (A.A.S., A.G.S.)

EARTH 1105 (P1 908L)
Environmental Geology
4 Credit Hours
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. (3 lecture hours, 2 lab hours)
Prerequisite: Course requires Reading Placement Category One. Recommended course: MATH 0465 or MATH 0481. Successful completion of high school algebra is assumed.
Course types: Physical Sciences, Physical/Life Science (A.A.S., A.G.S.)

EARTH 1110 (P1 905L)
Introduction to Meteorology
4 Credit Hours
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. (3 lecture hours, 2 lab hours)
Prerequisite: MATH 0465 or MATH 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 Category One.
Course types: Physical Sciences, Physical/Life Science (A.A.S., A.G.S.)

EARTH 1111 (P1 905)
Climate and Global Change
3 Credit Hours
Introduction to the earth's climate, climate change, and the interactions between climate and the global environment. Discussion of large-scale physical processes explaining weather and climate will lead to discussions on how climate and climate change impact the global ecosystem. Primary concepts studied will include climate classifications, anthropogenic and natural factors leading to climate change and potential impacts of climate variability and climate change. Human impacts, government assessment, response and mitigation of a changing global environment will be discussed. (3 lecture hours)
Prerequisite: MATH 0465 or MATH 0481 (or college equivalent) with a grade of C or better or qualifying score on the mathematics placement test. Course requires Reading Placement Category One.
Course types: Physical Sciences, Physical/Life Science (A.A.S., A.G.S.)

EARTH 1112
Introduction to Thunderstorm Lab
2 Credit Hours
Classroom preparation will include thunderstorm forecasting basics, structure and evolution of supercell thunderstorms, spotter techniques and severe weather safety. Students will be involved in daily forecast discussions and weather analysis and will journal their storm chase experiences as they observe severe weather events. (1 lecture hour, 2 lab hours)
Course types: Physical/Life Science (A.A.S., A.G.S.)

EARTH 1115 (P1 905L)
Severe and Unusual Weather
4 Credit Hours
In-depth study of meteorological phenomena relating to thunderstorms, El Nino/Southern Oscillation events, and tropical storms. Topics will include severe weather spotting, weather radar, atmospheric soundings, tornado genesis, El Nino, 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. (3 lecture hours, 2 lab hours)
Prerequisite: MATH 0465 or MATH 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 Category One.
Course types: Physical Sciences, Physical/Life Science (A.A.S., A.G.S.)

EARTH 1116
Weather Analysis and Forecasting I
1 Credit Hour
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. (2 lab hours)
Prerequisite: Course requires Reading Placement Category One.
Course types: Physical/Life Science (A.A.S., A.G.S.)

EARTH 1117
Weather Analysis and Forecasting II
1 Credit Hour
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. (2 lab hours)
Prerequisite: EARTH 1116 or equivalent. Course requires Reading Placement Category One.
Course types: Physical/Life Science (A.A.S., A.G.S.)

EARTH 1119 (P1 905)
Weather Impacts and Preparedness
3 Credit Hours
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)
Course types: Physical Sciences, Physical/Life Science (A.A.S., A.G.S.)

EARTH 1120 (P1 906)
Introduction to Astronomy
3 Credit Hours
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. (3 lecture hours)
Prerequisite: Course requires Reading Placement Category One. Recommended course: MATH 0465 or MATH 0481; successful completion of high school algebra is assumed.
Course types: Physical Sciences, Physical/Life Science (A.A.S., A.G.S.)

EARTH 1122 (P1 906L)
Astronomy: The Solar System
4 Credit Hours
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. (3 lecture hours, 3 lab hours)
Prerequisite: MATH 0465 or MATH 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 Category One.
Course types: Physical Sciences, Physical/Life Science (A.A.S., A.G.S.)

EARTH 1124 (P1 906L)
Astronomy: Stars and Galaxies
4 Credit Hours
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. (3 lecture hours, 3 lab hours)
Prerequisite: MATH 0465 or MATH 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 Category One.
Course types: Physical Sciences, Physical/Life Science (A.A.S., A.G.S.)

EARTH 1126 (P1 906L)
Observational Astronomy
3 Credit Hours
Students will be introduced to observational astronomy. This will include observing the sky with the use of telescopes and other instruments, locating and viewing astronomical objects visually and electronically, and using astronomical databases. Students will learn how to explore the universe to better understand planets, stars, and galaxies. (2 lecture hours, 2 lab hours)
Prerequisite: MATH 0465 or MATH 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 Category One.
Course types: Physical Sciences, Physical/Life Science (A.A.S., A.G.S.)

EARTH 1130 (P1 905L)
Introduction to Oceanography
4 Credit Hours
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. (3 lecture hours, 2 lab hours)
Prerequisite: MATH 0465 or MATH 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 Category One.
Course types: Physical Sciences, Physical/Life Science (A.A.S., A.G.S.)

EARTH 1131 (P1 905)
Fundamentals of Oceanography
3 Credit Hours
Students will be introduced to physical oceanography. Topics include ocean basin evolution by plate tectonics, seawater chemistry, waves, currents, tides, coastal processes, and the oceanic influences upon weather, climate, and climate change. Emphasis is placed on the natural resources provided by the world ocean and societal impacts upon the coastal and marine environments. The course is oriented to students in non-science majors. Students receive credit for either EARTH 1130 or EARTH 1131 but not both. (3 lecture hours)
Prerequisite: Course requires Reading Placement Category One. Recommended: MATH 0465 or MATH 0481 with a grade of C or better, or equivalent. Successful completion of high school algebra is assumed.
Course types: Physical Sciences, Physical/Life Science (A.A.S., A.G.S.)

EARTH 1135 (P1 905L)
Water Science-Fundamentals of Hydrology
4 Credit Hours
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. (3 lecture hours, 3 lab hours)
Prerequisite: MATH 0465 or MATH 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 Category One.
Course types: Physical Sciences, Physical/Life Science (A.A.S., A.G.S.)

EARTH 1140 (P1 905L)
Fundamentals of Earth Science
4 Credit Hours
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. Students receive credit for either Earth Science 1140 or 1141 but not both. (3 lecture hours, 2 lab hours)
Prerequisite: MATH 0465 or MATH 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 Category One.
Course types: Physical Sciences, Physical/Life Science (A.A.S., A.G.S.)

EARTH 1141 (P1 905)
Introduction to Earth Science
3 Credit Hours
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 Earth Science 1140 or 1141 but not both. (3 lecture hours)
Prerequisite: MATH 0465 or MATH 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 types: Physical Sciences, Physical/Life Science (A.A.S., A.G.S.)

EARTH 1800
Special Project
1-3 Credit Hours
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.
Course types: Physical/Life Science (A.A.S., A.G.S.)

EARTH 1820
Selected Topics I
1-3 Credit Hours
Introductory exploration and analysis of selected topics with a specific theme indicated by course title listed in college class schedule. This course may be taken four times for credit as long as different topics are selected. (1 to 3 lecture hours)
Prerequisite: Consent of instructor is required.
Course types: Physical/Life Science (A.A.S., A.G.S.)

EARTH 1840
Independent Study
1-4 Credit Hours
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. (1 to 4 lecture hours)
Prerequisite: Consent of instructor is required. Course requires Reading Placement Test Score-Category One.
Course types: Physical/Life Science (A.A.S., A.G.S.)

EARTH 2102
Origin and Evolution of the Earth
4 Credit Hours
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. (3 lecture hours, 2 lab hours)
Prerequisite: EARTH 1101, EARTH 1120, EARTH 1130, or EARTH 1140, with a grade of C or better or equivalent.
Course types: Physical/Life Science (A.A.S., A.G.S.)

EARTH 2103
Geologic Field Investigations
3 Credit Hours
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. (1 lecture hour, 4 lab hours)
Prerequisite: EARTH 1101, EARTH 1102, or EARTH 1140, or equivalent.
Course types: Physical/Life Science (A.A.S., A.G.S.)

EARTH 2110
Intermediate Meteorology
4 Credit Hours
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. (4 lecture hours)
Prerequisite: MATH 2231 or equivalent; or qualifying score on the mathematics placement test, and either EARTH 1110 or EARTH 1115 or equivalent, or consent of instructor.
Course types: Physical/Life Science (A.A.S., A.G.S.)

EARTH 2112
Thunderstorm Lab
2 Credit Hours
Applying knowledge and previous experience of severe weather, students will travel across the United States and Canada to experience severe thunderstorms first-hand. Classroom preparation includes thunderstorm forecasting and analysis, directing weather discussions, and improving understanding of severe weather meteorology. Students will lead daily forecast discussions and will journal their experiences and meteorological conditions during the field study. (1 lecture hour, 2 lab hours)
Prerequisite: EARTH 1115 with a grade of C or better, or equivalent and concurrent enrollment in EARTH 2118, or consent of instructor.
Course types: Physical/Life Science (A.A.S., A.G.S.)

EARTH 2114
Aviation Meteorology
2 Credit Hours
An introduction into meteorological phenomena and weather data that is fundamental to aviation. The basics of weather-related flight hazards including thunderstorms, icing, wind shear, and turbulence will be discussed. Students will interpret various text and charted aviation weather products as used commonly by pilots including Aviation Routine Weather Reports (METARs), Terminal Aerodrome Forecasts (TAFs), and graphical information available from the Aviation Weather Center. (2 lecture hours)
Prerequisite: EARTH 1110 and EARTH 1116, both with a grade of C or better, or equivalent or consent of instructor.

EARTH 2115
Mesoscale Meteorology
4 Credit Hours
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. (4 lecture hours)
Prerequisite: EARTH 1115 or equivalent or consent of instructor.
Course types: Physical/Life Science (A.A.S., A.G.S.)

EARTH 2116
Adv Weather Analysis & Forecasting I
1 Credit Hour
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. (2 lab hours)
Prerequisite: EARTH 1117 and MATH 0465 or MATH 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 types: Physical/Life Science (A.A.S., A.G.S.)

EARTH 2117
Adv Weather Analysis & Forecasting II
1 Credit Hour
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. (2 lab hours)
Prerequisite: EARTH 2116 or equivalent.
Course types: Physical/Life Science (A.A.S., A.G.S.)

EARTH 2118
Severe Weather Lab
1 Credit Hour
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 will monitor events prior to and during severe weather events using real time radar and other data sources. Students will 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. (3 lab hours)
Prerequisite: EARTH 1115 with a grade of C or better, or equivalent or consent of instructor.
Course types: Physical/Life Science (A.A.S., A.G.S.)

EARTH 2800
Special Project
1-3 Credit Hours
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.
Course types: Physical/Life Science (A.A.S., A.G.S.)

EARTH 2820
Advanced Selected Topics I
1-3 Credit Hours
Advanced exploration and analysis of selected topics with a specific theme indicated by course title listed in college class schedule. This course may be taken four times for credit as long as different topics are selected. (1 to 3 lecture hours)
Prerequisite: At least one course in the discipline or consent of instructor.
Course types: Physical/Life Science (A.A.S., A.G.S.)

EARTH 2860
Internship (Career & Technical Ed)
1-4 Credit Hours
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. (5 to 20 lab hours)
Prerequisite: Consent of instructor and 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 Dean from the academic discipline where the student is planning to earn credit.
Course types: Contemporary Life Skills (A.A., A.S., A.A.S., A.G.S.), Physical/Life Science (A.A.S., A.G.S.)

EARTH 2865
Internship Advanced (Career & Tech Ed)
1-4 Credit Hours
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. (5 to 20 lab hours)
Prerequisite: Consent of instructor and 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 Dean from the academic discipline where the student is planning to earn credit.
Course types: Contemporary Life Skills (A.A., A.S., A.A.S., A.G.S.), Physical/Life Science (A.A.S., A.G.S.)

EARTH 2870
Internship (Transfer)
1-4 Credit Hours
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. (5 to 20 lab hours)
Prerequisite: Consent of instructor and 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 Dean from the academic discipline where the student is planning to earn credit.
Course types: Contemporary Life Skills (A.A., A.S., A.A.S., A.G.S.), Physical/Life Science (A.A.S., A.G.S.)

EARTH 2871
Internship - Advanced (Transfer)
1-4 Credit Hours
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. (5 to 20 lab hours)
Prerequisite: Consent of instructor and 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 Dean from the academic discipline where the student is planning to earn credit.
Course types: Contemporary Life Skills (A.A., A.S., A.A.S., A.G.S.), Physical/Life Science (A.A.S., A.G.S.)