GEOLOGY (GLY)

GLY 102. Earth Science for Elementary Teachers. (3 Credits)
I, II. Prerequisite: Elementary, special education elementary, and elementary DHH education majors only or departmental approval. This inquiry-based course for elementary teachers integrates content, pedagogy and technology to explore Earth as an integrated set of systems and as part of the Solar System. 1 Lec/4 Lab. Gen. Ed. IVB or VII (NS).

GLY 103. Earth Science for Middle Grades Teachers. (3 Credits)
II. Prerequisite: Middle grades, special education middle grades, and DHH middle grade education majors only or Earth Science Teaching minors or departmental approval. This inquiry-based course for middle grades teachers integrates content, pedagogy, and technology to explore earth science content aligned with relevant standards in the Next Generation Science Standards and the Praxis Middle School Science exam. 1 Lec/ 4 Lab.

GLY 104. The Ocean World. (3 Credits)
(3) Formerly GLY 304. I, II. Investigation of the geologic, physical, biogeochemical, and biologic processes that occur within the oceans of the world. The course emphasizes connections between these processes, and hom those connections interact with our planet's life. 2 Lec/2 Lab. Gen Ed E-4. Credit will not be awarded to students who have credit for GLY 304.

GLY 107. Gold and Diamonds. (3 Credits)
A. The geology of gold and diamonds, including mineralogy, natural occurrence, exploration, and mining. The impact of gold, diamonds, and other important earth materials on the environment, history, and society will also be discussed. 2 Lec/2 Lab. Gen. Ed. IVB or VII (NS).

GLY 108. Earthquakes and Volcanoes. (3 Credits)
I, II. Investigation of the Earth as it exists and functions today, the materials that compose the Earth, the processes that act upon and within the Earth, and the interrelationship of both materials and processes with human activity. 2 Lec/2 Lab. Gen. Ed. IVB or VII (NS).

GLY 109. Great Moments in Earth History. (3 Credits)
I, II. Investigation of the origin of the Earth as a planet and its evolutionary development of physical and biological systems through time. Important turning points in the Earth¿s history will be emphasized. 2 Lec/2 Lab. Gen. Ed. IVB or VII (NS).

GLY 210. Introduction to Geochemistry. (3 Credits)
I. Prerequisite or Corequisite: ACT math score of 22, or SAT math score of 530, or passing algebra placement test scores (KYOTE algebra domain KAD score of 14 or higher). or MAT 112, 114, or departmental approval. An introduction to the application of fundamental concepts and skills in chemistry (nomenclature, stoichiometry, bonding, chemical change) to geology, including the distribution of the elements, mineral chemistry, and radiometric dating.

GLY 302. Earth Science. (3 Credits)
(3) A. Prerequisite: GLY 102, 104, 107, 108, or 109. Study of the universe and our solar system, the Earths atmospheric and climatic elements, its physical processes and features, organic development, and natural resources.

GLY 303. Environmental Geoscience. (3 Credits)
A. Prerequisite: GLY 103, 104, 107, 108, or 109; or GEO 100, 110, or 210; or departmental approval. Investigation of the Earth as a complex set of interconnected systems that cycle elements, water, and earth materials over geologic and human times scales. The course emphasizes global environmental changes that occur on the planet because of human actionsl. Credit will not be awarded for both GLY 303 or ENV 303.

GLY 305. Dinosaurs. (3 Credits)
(3) A. Prerequisites: GLY 102, 104, 107, 108, 109; ENG 102, ENG 105(B) or HON 102; or departmental approval. The rise, diversification, and extinction of this prominent group of organisms. This course attempts to explore how scientists make inferences about the past, including the use and limitations of physical evidence and the nature of science.

GLY 307. Exploring the Dynamic Earth. (3 Credits)
Formerly GLY 107. Planet Earth: origin, composition, and evidence of activity and energetic recycling of Earth materials via plate tectonics.

GLY 309. Mineralogy. (4 Credits)
A. Course will be offered every even Fall semester. Prerequisites: GLY 104, 107, 108, or 109; MAT 112 (A and B) or higher; or departmental approval. Study of minerals commonly encountered in rocks and soils with minor emphasis on ore deposits: mineral geochemistry, crystal structure, classification, physical properties, optical properties, and geologic environment. Laboratory develops the ability to identify minerals in hand specimens and thin sections. 3 Lec/2 Lab.

GLY 315. Hydrology. (3 Credits)
A. Course will be offered every even Fall semester. Prerequisites: One from GLY 104, 107, 108, or 109; and MAT 114 or both MAT 112A and MAT 112B or ACT 23 and above or SAT 550; or departmental approval. Interrelationships between Earth's systems and the occurrence and character of water in streams, lakes, and groundwater. Focuses on fundamental understanding of hydrologic processes and reservoirs, interaction between surface waters and groundwater and relationships between human activity and these reservoirs. 2 Lec/ 2 Lab.

GLY 349. Applied Learning in Geology. (0.5-8 Credits)
I, II. Work in placements related to academic studies. Total hours for baccalaureate, sixteen. A minimum of 80 hours of employment required for each semester hour of academic credit. May not be used to satisfy area, major, or minor requirements.

GLY 349A. Cooperative Study: Geology. (0.5-8 Credits)
I, II. Work in placements related to academic studies. Total hours for baccalaureate, sixteen. A minimum of 80 hours of employment required for each semester hour of academic credit. May not be used to satisfy area, major, or minor requirements.

GLY 349B. Cooperative Study: Geology. (0.5-8 Credits)
I, II. Work in placements related to academic studies. Total hours for baccalaureate, sixteen. A minimum of 80 hours of employment required for each semester hour of academic credit. May not be used to satisfy area, major, or minor requirements.

GLY 351. Field Methods. (3 Credits)
A. Prerequisites: GLY 104, 107, 108, or 109; or departmental approval. Methods of field geology including description and measurement of rock sequences, introduction to geological mapping and writing geological reports. 1 Lec/4 Field.

GLY 398. Independent Studies in Geology. (1-6 Credits)
A. Prerequisite: departmental approval. Topic determined by student and instructor. Student must have the independent study proposal form approved by faculty supervisor and department chair prior to enrollment. May be retaken to a maximum of six hours provided topic is different each time.

GLY 408. Process Geomorphology. (3 Credits)
A. Prerequisite: GEO 110 or 210, 104, 107, 108, 109; or departmental approval. An in-depth study of the geologic processes involved in landform development.

GLY 409. Igneous & Metamorphic Petrology. (4 Credits)
A. Course will be offered every odd Fall semester. Prerequisites: GLY 309 and MAT 112 or higher. Nature and origin of common igneous and metamorphic rocks, with emphasis on crystalline rocks. Lab develops the ability to analyze and classify rocks in hand sample and in thin section using a petrographic microscope. 3 Lec/2 Lab.

GLY 410. Structural Geology. (4 Credits)
A. Course will be offered every odd Fall semester. Prerequisites: GLY 104, 107, 108, or 109; and MAT 112 (A and B) or higher. Deformation of Earth's crust across a wide range of scale with emphasis on plate tectonics and its consequences. Lab develops the ability to analyze the geometry of deformed rock bodies and solve common structural problems. Course includes a MANDATORY field trip during Fall Break. 3 Lec/2 Lab.

GLY 415. Sedimentary Geology. (4 Credits)
A. Course will be offered every odd Fall semester. Prerequisite: GLY 104, 107, 108, 109; MAT 112 (A and B) or higher; or departmental approval. Examination of sedimentary processes and products, the characteristics and origins of sedimentary rocks and their related depositional environments, and application of these principles to solving geological problems. Laboratory develops techniques for describing and interpreting sedimentary rocks, structures, and stratigraphy. Course includes a MANDATORY field trip during Fall Break. 2 Lec/4 Lab.

GLY 420. Stratigraphy. (4 Credits)
A. Course will be offered every even Spring semester. Prerequisites: GLY 415 and MAT 112B or higher with a grade of C or better. Description, correlation, and interpretation of stratified sedimentary sequences; basic identification and interpretation of the fossils they contain. Emphases: rock-vs. time-stratigraphy, facies relationships, sequence stratigraphy, event stratigraphy, biostratigraphy, well log correlation. Course includes a mandatory, overnight, weekend field trip. 2 Lec/4 Lab.

GLY 450. Evolution of the Earth. (3 Credits)
A. Course will be offered every odd Spring semester. Prerequisite: ENG 102 or 102R or 105 or HON 102 and GLY 309, 409, 410, 415, or 420, or departmental approval. Overview of geological principles from the perspective of the Earths history, physical and biological. Emphasis on critical thinking and expressive writing. Credit will not be awarded to students who have credit for GLY 450W or 550.

GLY 450W. Evolution of the Earth. (3 Credits)
A. Course will be offered every odd Spring semester. Prerequisite: ENG 102 or 102R or 105 or HON 102 and GLY 309, 409, 410, 415, or 420, or departmental approval. Overview of geological principles from the perspective of the Earths history, physical and biological. Emphasis on critical thinking and expressive writing. Credit will not be awarded to students who have credit for GLY 550.

GLY 451. Field Camp. (6 Credits)
SUMMER ONLY. Prerequisites: GLY 409 and 410. Field-training course in the northern and central Rocky Mountains (6 weeks). Analysis of rock sequences; geologic mapping of sedimentary, metamorphic, and igneous terrains; interpretation of complex rock deformation; regional geological synthesis with emphasis on tectonics; and visits to many instructive geologic localities, including national parks and monuments.

GLY 460. Aqueous Geochemistry. (3 Credits)
A. Prerequisite: GLY 210 or CHE 111 and 111L. Reactions between natural waters, atmospheric gasses and earth materials in surface and near surface environments. Emphasis is placed on consequences of chemical weathering, composition of surface and near surface water, geochemical cycles, and natural and anthropogenic geochemical events. 2 Lec/2 Lab.

GLY 480. Petroleum Geology. (3 Credits)
A. Pre/Corequisites: GLY 410 and GLY 420. Use of the petroleum systems paradigm to explore characteristics of economically-viable petroleum accumulations. Examines fundamental activities such as electric logging, mudlogging, and drilling. Exercises and projects model industry practices in recognizing and understanding petroleum accumulations. 2 Lec/ 2 Lab.

GLY 482. Paleoclimate. (3 Credits)
A. Prerequisite: GLY 104, 109, 415, GEO 115, 210, or 315; or departmental approval. How the interaction of ocean and atmosphere creates climate in the planet today and leaves its record in geologically accessible Earth materials, with an emphasis on the interpretation of the geological record and how we learn how the Earth¿s climate has changed in the past.

GLY 498. Capstone Project in Geology. (3 Credits)
A. Prerequisite: senior standing and departmental approval. A capstone experience for geology majors that integrates a research experience with the students' professional development and the production of a substantive deliverable product (e.g. poster, conference presentation, geologic map.) Student must have the independent study form approved by faculty supervisor and department chair prior to enrollment.

GLY 499. Senior Thesis. (3 Credits)
A. Prerequisites: senior standing and department approval. Supervised, independent thesis project for majors in geology. Thesis project must be approved by faculty supervisor and department committee prior to enrollment in the course. Student must have the independent study form approved by faculty supervisor and department chair prior to enrollment.

GLY 535. Hydrogeology. (3 Credits)
A. Course will be offered every odd Spring semester. Prerequisite: GLY 104, 107, 108, or 109; and MAT 112 or higher. Origin, occurrence, movement, utilization, and conservation of groundwater. Qualitative and quantitative presentation of geological, physical, and geochemical aspects of groundwater hydrology. 2 Lec/2 Lab.

GLY 580. Selected Topics:___. (1-3 Credits)
A. Prerequisite: senior standing or departmental approval. Designed to explore specific aspects of geology. May be retaken to a maximum of six hours provided topic is different each time.

GLY 735. Hydrogeology. (3 Credits)
A. Course will be offered every odd Spring semester. Origin, occurrence, movement, utilization, and conservation of groundwater. Qualitative and quantitative presentation of geological, physical, and geochemical aspects of groundwater hydrology. 2 Lec/2 Lab.

GLY 780. Selected Topics:_____. (1-3 Credits)
A. Prerequisite: departmental approval. Designed to explore specific aspects of geology. May be retaken to a maximum of six hours provided topic is different each time.

GLY 812. Clay Mineralogy. (3 Credits)
Structure, origin, occurrence, and use of clay minerals. X- ray diffraction techniques and differential thermal analysis used to identify clay minerals.