GEOLOGY (GEOL)

GEOL 550 Glacial Geology 3 Credit Hours
The study of landforms and sediments created by glaciers both past and present. The glacial activities of the past 2 million years will be emphasized, particularly the evolution of landforms common to the upper Midwest. The influence of glacial deposits on development, construction methods, planning and environmental protection will also be discussed. (AY).
Prerequisite(s): GEOL 118 and GEOL 218
Restriction(s):
Can enroll if Class is Graduate

GEOL 560 Engineering Geology 3 Credit Hours
The application of structural geology and stratigraphy to the practice of civil engineering. Emphasis is placed on the application of geologic analysis to facilitate the successful completion of engineering projects. Case histories will be used to evaluate how geologic knowledge has been used in both successful and unsuccessful engineering projects. (W, AY)
Prerequisite(s): GEOL 370
Restriction(s):
Cannot enroll if Class is Freshman or Sophomore or Junior

GEOL 570 Geochemistry 3 Credit Hours
Application of the principles and techniques of geochemistry to the field of groundwater hydrology. Composition of natural water and the processes affecting the geochemical mobility of dissolved solids will be studied. Emphasis will be on the influence of the geochemical environment on water composition and water pollution. Course will include a review of analytical methods for the determination of water quality. Three hours lecture. (AY).
Prerequisite(s): GEOL 375 and CHEM 344
Restriction(s):
Can enroll if Level is Rackham or Graduate
Can enroll if College is Business

GEOL 574 Urban Watersheds 3 Credit Hours
Study of the geology, contamination and sustainable development in urban watersheds with a focus on the fate and transport of contaminants in the soil and water. Students are expected to have a rudimentary background in physical geology.

GEOL 575 Contaminant Hydrogeology 3 Credit Hours
Advanced lecture treatment of selected topics in subsurface hydrology including contaminant transport and fate of organic and inorganic constituents, aquifer test analysis, and the use of selected case histories. (AY)
Prerequisite(s): GEOL 375
Restriction(s):
Can enroll if Class is Graduate

GEOL 577 Geology Field Methods 1 to 2 Credit Hours
One to two week long intensive field course conducted at the end of the winter semester. The course will emphasize geological field methods and analysis of geologic terrains. Use of Brunton compass and clinometer, GPS, recognition and identification of geological structures, preparation and interpretation of geologic maps, satellite images and aerial photographs will also be covered. May be repeated for credit when destination varies. Two credit hours will be given for a field course which lasts two weeks. Alternatively, students may elect to take the shorter course (one-week to 10 days) for 2 credit hours if they are willing to serve as a teaching assistant. Organizational meetings will be held during the winter semester. (YR).
Prerequisite(s): GEOL 118 and GEOL 218
Restriction(s):
Can enroll if Class is Graduate

GEOL 578 Geology of the National Parks 3 Credit Hours
The study of the geology (stratigraphy, structure, geomorphology) of major national parks and monuments. Specific areas visited vary from year to year, enabling the course to be repeated for credit. Emphasis is placed on developing note taking skills in the field, describing rock sequences in outcrop, interpreting geologic maps and aerial photographs, and evaluating cratonic sequences, regional correlations, paleogeographic and paleoclimatic reconstructions, small and regional scale structural patterns, and facies changes related to rising and falling sea level.
Restriction(s):
Can enroll if Class is Graduate

GEOL 587 Groundwater Modeling 3 Credit Hours
Lecture and computer laboratory applications of two- and three-dimensional groundwater flow and contaminant transport problems. Visual Modflow, Modpath (-PLOT and SUTRA), MT3D, and Surfer will be used to evaluate remedial alternatives (e.g., pump and treat, funnel and gate or trench and drain systems). EPA's Basin software combined with ESRI's GIS software ArcView will be used to evaluate and compare the Rouge River watershed with other small-scale watersheds in Michigan. (AY)
Prerequisite(s): GEOL 375 or GEOL 498*
Restriction(s):
Can enroll if Class is Graduate

GEOL 590 Topics in Earth Science 1 to 4 Credit Hours
Current topics in Earth Science. One to four graduate credit hours. (OC)
Restriction(s):
Can enroll if Class is Graduate

* An asterisk denotes that a course may be taken concurrently.

Frequency of Offering

The following abbreviations are used to denote the frequency of offering: (F) fall term; (W) winter term; (S) summer term; (F, W) fall and winter terms; (YR) once a year; (AY) alternating years; (OC) offered occasionally