

# GEOLOGY

---

Phillips 157  
715-836-3732

Department Website (<https://www.uwec.edu/academics/college-arts-sciences/departments-programs/geology/>)

The Geology Department offers graduate-level course work but no graduate degree programs.

## Graduate Faculty

Scott K. Clark, Ph.D.  
Robert L. Hooper, Ph.D.  
Phillip D. Ihinger, Ph.D. (Chair)  
Robert W.D. Lodge, Ph.D.  
J. Brian Mahoney, Ph.D.  
Kent M. Syverson, Ph.D.  
Sarah A. Vitale, Ph.D.

No graduate degree programs offered.

All 500- and 600-level graduate courses include requirements or assignments which differentiate them from their companionate 300- and 400-level undergraduate offerings. Students who have taken a course at the 300- or 400-level may not include that course at the 500- or 600- level in a graduate program, except in the case of special topics courses when the topic is not the same as that taken at the undergraduate level.

### GEOL 515 Hydrogeology I (4 crs)

Prerequisite: GEOL 106, or GEOL 110, or GEOL 115, or GEOL 118, or GEOL 130 and GEOL 131; MATH 112, or MATH 114, or MATH 215.

Consent: Instructor Consent Required

• *Cross-listed with GEOL 315. Credit may not be earned in both courses.*

The hydrologic cycle, runoff and streamflow, saturated groundwater flow, contaminant transport, geology of groundwater occurrence, aquifer characterization, groundwater flow to wells, hydrogeologic field techniques, groundwater flow and contaminant transport computer modeling, groundwater development and management.

Attributes: Field Trip(s) Required  
Grading Basis: No S/U Grade Option  
Lecture/Discussion Hours: 3  
Lab/Studio Hours: 3

---

### GEOL 536 Introduction to Geochemistry (3 crs)

Prerequisite: GEOL 312; CHEM 104 or CHEM 109 or CHEM 115

Consent: Instructor Consent Required

• *Cross-listed with GEOL 336. Credit may not be earned in both courses.*

Application of chemistry to geologic problems. Principles of isotope geochemistry, thermodynamics, chemistry of natural waters, and computer modeling of geochemical systems.

Grading Basis: No S/U Grade Option  
Lecture/Discussion Hours: 3  
Lab/Studio Hours: 0

---

### GEOL 537 Analytical Geochemistry Laboratory (1 cr)

Prerequisite: GEOL 336/GEOL 536 or concurrent registration.

Consent: Instructor Consent Required

• *Cross-listed with GEOL 337. Credit may not be earned in both courses.*

Theory and application of geochemical instrumentation including x-ray diffraction, x-ray microanalysis, scanning electron microscopy, atomic absorption spectrometry, mass spectrometry, and neutron activation analysis.

Grading Basis: No S/U Grade Option  
Lecture/Discussion Hours: 0  
Lab/Studio Hours: 2

---

### GEOL 616 Hydrogeology II (4 crs)

Prerequisite: GEOL 315/GEOL 515

Consent: Instructor Consent Required

• *Cross-listed with GEOL 416. Credit may not be earned in both courses.*

Review of principles of groundwater flow and contaminant transport, reactive groundwater contamination, groundwater remediation, chemical evolution of natural groundwater, flow in the unsaturated zone, advanced groundwater flow and contaminant transport computer modeling, water law.

Attributes: Field Trip(s) Required  
Grading Basis: No S/U Grade Option  
Lecture/Discussion Hours: 3  
Lab/Studio Hours: 2

---

### GEOL 645 Engineering Geology and Geophysics (5 crs)

Prerequisite: GEOL 312; PHYS 211 or PHYS 231; MATH 114 or consent of instructor.

Consent: Instructor Consent Required

• *Cross-listed with GEOL 445. Credit may not be earned in both courses.*

Application of geological and geophysical principles to solve human problems. Discussion of soil and rock mechanics, slope stability, earthquake analysis and seismic planning, and geophysical techniques including seismic, gravity, magnetic, electrical, and electromagnetic surveying.

Attributes: Field Trip(s) Required  
Grading Basis: No S/U Grade Option  
Lecture/Discussion Hours: 4  
Lab/Studio Hours: 2

---

### GEOL 661 Applied Geophysics (4 crs)

Prerequisite: GEOL 106, GEOL 110, GEOL 115, or GEOL 118; MATH 114; PHYS 211 or PHYS 231. No credit if taken after GEOL 445/GEOL 645.

• *Cross-listed with GEOL 461. Credit may not be earned in both courses.*

Acquisition, processing, and interpretation of geophysical data including seismic, gravity, magnetic, GPR, resistivity, and electromagnetic methods.

Attributes: Field Trip(s) Required  
Lecture/Discussion Hours: 3  
Lab/Studio Hours: 2

---

**GEOL 691 Advanced Special Topics (1-4 crs)**

Consent: Instructor Consent Required

- *Cross-listed with GEOL 491.*

Topics of special interest and current relevance to the advanced geology student; includes field excursions. Topics vary.

Repeat: Course may be repeated

Grading Basis: No S/U Grade Option

---

**GEOL 793 Directed Studies (1-4 crs)**

Consent: Instructor Consent Required

Permits groups of students to study topical areas in an intensive way under the direction of department faculty members.

Repeat: Course may be repeated

Grading Basis: No S/U Grade Option

---

**GEOL 797 Independent Study (1-3 crs)**

Consent: Department Consent Required

Independent study projects under direction of faculty members.

Repeat: Course may be repeated

Grading Basis: No S/U Grade Option

---