M.S. Option in Petroleum and Geofluids

Extensive interest in alternative energy (e.g., geothermal) and carbon sequestration, coupled with long term needs for petroleum resource stewardship, have driven remarkable science and career opportunities at the intersection of Earth Science and the management of petroleum, gas, carbon dioxide, and thermal fluids in the shallow crust. Despite recently volatile price trends, graduates of Earth Science programs remain in high demand by petroleum companies and receive excellent starting salaries. A resurgent interest in geothermal energy may further create significant numbers of new jobs in heat and power prospecting, production, and reservoir management the future.

The Earth & Environmental Science Department offers an option under the Hydrology M.S. degree to specifically meet these needs. Students can follow either a petroleum or environmental focus, as follows.

**Required Courses**

ERTH 440 (4) Hydrological Theory and Field Methods  
ERTH 441 (1) Aquifer Mechanics  
ERTH 460 (3) Subsurface and Petroleum Geology  
HYD 508 (3) Flow and Transport in Hydrological Systems  
HYD 510 (3) Quantitative Methods in Hydrology  
HYD 571 (3) Advanced topics: Geofluids Modeling  
HYD 592 (2) Graduate Seminar  
HYD 591 (6) Thesis

**Petroleum Focus (select at least 9 hours)**

ERTH 325 (3) Near-Surface Geophysics  
ERTH 445 (3) Exploration Seismology  
GEOL 547 (3) Depositional Systems and Basin Analysis  
GEOP 546 (3) Reflection Seismic Data Interpretation  
PETR 370 (3) or ERTH 370 Formation Evaluation  
PETR 345 (3+1) Reservoir Engineering I  
PETR 445 (3) Reservoir Engineering II
PETR 546 (3) Advanced Formation Evaluation

**Environmental Focus (select at least 9 hours)**

ERTH 325 (3) Near-Surface Geophysics  
CHEM/ERTH 422 (3+1) Environmental Chemistry  
GEOL 509 (3) Soil Geomorphology  
HYD 507 (3) Hydrogeochemistry  
HYD 532 (1) Vadose Zone Dynamics  
HYD 538 (3) Advanced Geographic Information Systems  
HYD 541 (1) Water Resources Management  
HYD 544 (1) Groundwater Remediation  
HYD 546 (3) Contaminant Hydrology  
HYD 547 (3) Hydrological Modeling  
HYD 558 (3) Environmental Tracers in Hydrology