The Department of Geology at Wayne State University consists of five full-time faculty and five part-time instructors. Faculty include: Drs. Mark Baskaran (Isotope Geochemistry), Sarah Brownlee (Geochemistry and Geophysics), Jeffrey Howard (Sedimentology), Larry Lemke (Hydrogeology), and Ed van Hees (Economic Geology). The Geology Department is housed in the historic Old Main Building, and owns an extensive collection of rocks, minerals and fossils for teaching and research. It is also one of the few depositories for oil and gas well cores in Michigan.

32 Credits (24 course work + 8 thesis credits) are required for the Master of Science degree in Geology. The graduate curriculum may include courses in traditional fields (Hydrogeology, Economic Geology, Geochronology), and in the field of Environmental Geology (Site Assessment, Soils and Soil Pollution, Environmental Isotope Geochemistry, Environmental Geochemistry). Financial assistance is available through: 1) Wayne State University (finaid.wayne.edu), 2) research assistantships, 3) a limited number of teaching assistantships in the Department of Geology, 4) summer internships in field geology, and 5) as student assistants in the Physical Geology laboratory.

Wayne State University is located within the glaciated landscape of the southern Great Lakes region and in the post industrial urban environmental setting of Detroit in southeast Michigan. WSU geology faculty conduct research in the general areas of Sedimentology, Stratigraphy, Soil Science, Hydrogeology, Environmental Geology, Oceanography, Geochemistry, Geophysics, Igneous Petrology and Economic Geology. Faculty conduct research in Michigan, Minnesota, California, Florida, Alaska, and the Arctic Ocean. The Department has state-of-the-art equipment for analysis of stable and radioactive isotopes, petrographic microscopes, wet and dry laboratory space, and equipment for thin section preparation, x-ray fluorescence, magnetic and heavy-liquid mineral separation, and light and cathodoluminesence microscopy.

According to the U.S. Bureau of Labor Statistics, employment of geologists is expected to grow faster (16%) than the average of all occupations through 2022. The need to replace geologists who retire will result in many additional job openings over the next decade. Growth will be driven by the need for organizations to comply with an increasing number of environmental laws and regulations, particularly those regarding groundwater contamination, clean air and flood control. Increased global exploration and development of oil, gas and mineral resources often requires geologists to work overseas. Qualifications needed for such opportunities include the ability to speak a foreign language and a willingness to work abroad.

In 2012, the median salary for geoscientists was $90,900 per year. In 2013, starting salaries for geoscientists with master’s degrees ranged from $35K to $120K. In 2013, average salaries for Petroleum Geologists with an M.S. degree and 0-2 years experience were $103,800.

Department of Geology
0224 Old Main Building
Wayne State University
Detroit, Michigan 48202

Phone: 313-577-2506
Fax: 313-577-0517
clas.wayne.edu/geology

An MS degree in Geology can prepare you for a career as a professional geologist and enhance your earning potential.

Advice for Grad Students:
- Meet with your advisor to develop a plan of work as soon as possible.
- Meet with your thesis committee as soon as possible to discuss your research prospectus.
- Register early to be sure you get the classes you want before they fill up.
- Always attend the first day of class to ensure sufficient enrollment for the course to run.
Graduate Program in Geology

Master of Science in Geology (32 credits total required)

Geology Graduate Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Faculty</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEL 5000</td>
<td>Geological Site Assessment</td>
<td>4</td>
<td>Lemke</td>
<td>alt. years (winter)</td>
</tr>
<tr>
<td>GEL 5120</td>
<td>Environmental Geochemistry</td>
<td>4</td>
<td>Baskaran</td>
<td>alt. years (fall)</td>
</tr>
<tr>
<td>GEL 5150</td>
<td>Soils and Soil Pollution</td>
<td>4</td>
<td>Howard</td>
<td>yearly (summer)</td>
</tr>
<tr>
<td>GEL 5450</td>
<td>Hydrogeology</td>
<td>4</td>
<td>Lemke</td>
<td>alt. years (winter)</td>
</tr>
<tr>
<td>GEL 5510</td>
<td>Contaminant Fate and Transport</td>
<td>4</td>
<td>Baskaran</td>
<td>yearly (winter)</td>
</tr>
<tr>
<td>GEL 5600</td>
<td>Special Topics: Applied Geologic Mapping</td>
<td>4</td>
<td>Sperone</td>
<td>yearly (winter)</td>
</tr>
<tr>
<td>GEL 6400</td>
<td>Nuclear Geology</td>
<td>4</td>
<td>Baskaran</td>
<td>alt. years (fall)</td>
</tr>
<tr>
<td>GEL 6500</td>
<td>Economic Geology</td>
<td>4</td>
<td>van Hees / Lemke</td>
<td>alt. years (fall)</td>
</tr>
<tr>
<td>GEL 7990</td>
<td>Directed Study (2-8 credits, 8 max)</td>
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<td>staff</td>
<td>all semesters</td>
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<tr>
<td>GEL 7997</td>
<td>Directed Study (2-8 credits, 8 max)</td>
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</tr>
<tr>
<td>GEL 8999</td>
<td>Master’s Thesis Research and Direction (1-8 cr, 8 max)</td>
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<td>staff</td>
<td>all semesters</td>
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</tbody>
</table>

Major Requirements

Twenty-four credits of geology course work plus an eight-credit thesis (Plan A of graduate bulletin) are required. Up to eight credits of course work may come from graduate courses in other disciplines with approval of the student’s thesis advisor and graduate committee.

Cognate Requirements

Although there are no cognate courses required for the Master of Science degree, geology majors should consult their adviser regarding cognate courses which will be of value to their particular program. Depending on interests and future goals, courses in mathematics, physics, chemistry, geographic information systems and computer science, and especially those in chemical or civil engineering may be of particular value.
Faculty Profiles

Dr. Mark Baskaran  
Field of specialization: Isotope geochemistry  
Research interests: Applications of radioactive isotopes as tracers and chronometers in environmental systems; Isotopic dating of sediments and rocks in the environment; Source, transport and fate of toxic contaminants in the environment using isotopic tracers

Dr. Sarah Brownlee  
Field of specialization: Geochemistry and Geophysics  
Research interests: Combining geochemistry and geophysics to study structure, composition, and elasticity of middle and lower crustal materials; Role of hydrous minerals in subduction zone processes; Evolution of continental rifts systems.

Dr. Jeffrey Howard  
Field of specialization: Sedimentology  
Research interests: Provenance analysis of clastic sedimentary rocks; Cenozoic tectonics and sedimentation along the San Andreas fault, southern California; Quaternary sedimentology, geomorphology and soils of southeastern Michigan

Dr. Lawrence Lemke  
Field of specialization: Hydrogeology  
Research interests: Computer modeling of groundwater flow and transport of toxic contaminants; Glacial sedimentology and groundwater geology of southeastern Michigan; Spatial variability of soil and airborne contaminants and particulate matter in Detroit and Windsor

Dr. Edmond Van Hees  
Field of specialization: Igneous and metamorphic petrology  
Research interests: Petrogenesis, geochemistry and structures of mesothermal gold deposits; Heavy metal pollution of sediments in southeastern Michigan
How to Apply

An online application, instructions, and answers to FAQs and helpful advice for preparing your graduate application materials can be found at the WSU Graduate Admissions Office website: gradschool.wayne.edu/future

The Admissions Process

Depending on the time of year, the graduate admission process can take as long as ten to twelve weeks, and sometimes longer for international students. After your application is received in the Office of Graduate Admissions, it is processed and entered into the university database. Shortly thereafter, your credentials will be collated, reviewed for eligibility and completeness, and forwarded to the Geology Department.

The Geology Faculty will review your application and our Graduate Program Director will return the Department's recommendation to either admit or deny your application to the Office of Graduate Admissions. Official notification of the decision will be provided to you by the Office of Graduate Admissions. Please keep in mind that your admission is for a specific term only. If you do not enroll during the term for which you were admitted, you must complete a Graduate Re-Application.

Requirements

Applications should include the following items:
- A personal statement explaining your goals and motivations for pursuing an M.S. Geology degree
- A current resume
- Official transcripts from all post-secondary schools (colleges and universities) attended
- GRE scores are strongly recommended
- TOEFL scores are required for international students. Please report your score to Wayne State University using institution code 1898.

Application Deadlines

Spring/Summer (term begins May) - apply by March 15
Fall (begins September) - apply by July 1
Winter (begins January) - apply by November 1

Note: Application deadlines for international students are earlier. Please check the Graduate Admissions web page for details: http://gradadmissions.wayne.edu/process.php

Application Fee

Currently, there is no fee imposed for graduate applications at Wayne State University.

Departmental Contact Information

For more information, please contact the Geology Graduate Program Director:
Dr. Sarah Brownlee
WSU Dept. of Geology
0224 Old Main, 4841 Cass Ave.
Detroit, MI  48202
sarah.brownlee@wayne.edu