HYDROLOGY, BACHELOR OF SCIENCE

College of Agricultural & Environmental Sciences

Faculty (http://lawr.ucdavis.edu/people/faculty/hydrology/)

The Major Program

Hydrology is the study of the occurrence, distribution, circulation, and behavior of water and water-borne materials in the environment of Earth. It includes practical measurement and technical analysis of water phenomena underground, on the Earth's surface, and in the atmosphere. Contemporary hydrologic problems include environmental restoration, sustainability of groundwater and surface water resources, water pollution, and natural disasters such as floods, droughts, landslides, avalanches, and land subsidence. The management of these problems demands hydrologic scientists with the comprehensive, interdisciplinary education embodied in this program. Beyond its societal utility, hydrology can be an exciting science for the curious-minded. Hydrologists explore natural phenomena such as climate change, waterfalls, health of coral reefs, biogeochemical cycles, and aquifers.

The Program

A hydrologist needs a strong background across the basic sciences of physics, mathematics, chemistry, and biology. Breadth of understanding comes from exposure to ecology, geology, engineering, policy, and law. Depth of experience is provided by core hydrology courses, internship opportunities, and practical outdoor training. Students choose electives to match their interests and career goals. Transfer students should have completed as much as possible of the preparatory subject matter listed below.

Internships and Career Alternatives

Job opportunities in hydrology exceed the available supply of trained hydrologists. Students commonly obtain internships and jobs with state and federal agencies, private consulting firms, environmental interest groups, irrigation districts, and utility companies. Federal agencies hiring hydrologists include the U.S. Geological Survey, U.S. Department of Agriculture (Fish & Wildlife, Agricultural Research, Forest Service, and National Resource Conservation Service), Environmental Protection Agency, and national research laboratories (Lawrence Livermore National Laboratory, Lawrence Berkeley National Laboratory). State and local agency employers include California's Departments of Water Resources, Conservation, Fish & Game, and Toxic Substances as well as the Water Resources Control Board and Regional Water Quality Control Boards. To obtain higher levels of responsibility and salary, hydrologists often seek advanced degrees, and the hydrology major is designed to provide students with a highly competitive education to get into graduate school.

Lead Faculty Advisor

Isaya Kisekka (Land, Air & Water Resources)

Hydrology Major Advisor

Lacole Brooks (lbrooks@ucdavis.edu)

Advising Center

1150 PES Building

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>BIS 002A</td>
<td>Introduction to Biology: Essentials of Life on Earth</td>
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<td>BIS 002B</td>
<td>Introduction to Biology: Principles of Ecology &amp; Evolution</td>
<td>5</td>
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<tr>
<td>CHE 002A</td>
<td>General Chemistry</td>
<td>5</td>
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<tr>
<td>CHE 002B</td>
<td>General Chemistry</td>
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<td>CHE 002C</td>
<td>General Chemistry</td>
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<tr>
<td>PHY 009A</td>
<td>Classical Physics</td>
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<td>MAT 021C</td>
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<td>MAT 021D</td>
<td>Vector Analysis</td>
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<td>Linear Algebra</td>
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<tr>
<td>MAT 022B</td>
<td>Differential Equations</td>
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<tr>
<td>GEL 050</td>
<td>Physical Geology</td>
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<td>GEL 050L</td>
<td>Physical Geology Laboratory</td>
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<td>ENG 006</td>
<td>Engineering Problem Solving</td>
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<tr>
<td>HYD 103N/</td>
<td>Fluid Mechanics Fundamentals Equivalent.</td>
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<tr>
<td>EBS 103</td>
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<td>ENG 103</td>
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<tr>
<td>ECI 114</td>
<td>Probabilistic Systems Analysis for Civil Engineers</td>
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<td>or STA 130A &amp; STA 130B</td>
<td>Mathematical Statistics: Brief Course and Mathematical Statistics: Brief Course</td>
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<tr>
<td>HYD 134</td>
<td>Aqueous Geochemistry</td>
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<td>HYD 141</td>
<td>Physical Hydrology</td>
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<td>HYD/EBS 144</td>
<td>Groundwater Hydrology</td>
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<td>ESM 108</td>
<td>Environmental Monitoring</td>
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<td>or HYD 151</td>
<td>Field Methods in Hydrology</td>
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<td>SSC 107</td>
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<td>HYD 150</td>
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<td>ARE 147</td>
<td>Resource &amp; Environment Policy Analysis</td>
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<td>ESP 161</td>
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### Hydrology, Bachelor of Science

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<tr>
<td>ESP 169</td>
<td>Water Policy &amp; Politics</td>
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<td>ESM 121</td>
<td>Water Science &amp; Management</td>
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### GIS & Remote Sensing

**Choose one:** 4-5

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<td>LDA/ABT 150</td>
<td>Introduction to Geographic Information Systems</td>
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<td>HYD/ABT 182</td>
<td>Environmental Analysis using GIS</td>
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<td>ESM 185</td>
<td>Aerial Photo Interpretation &amp; Remote Sensing</td>
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<tr>
<td>ESM 186</td>
<td>Environmental Remote Sensing</td>
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### Hydrologic Science

**Choose three:** 8-13

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<td>Irrigation Systems &amp; Water Management</td>
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<tr>
<td>HYD 118/ EBS 148/ESM 118</td>
<td>Evapotranspiration Principles, Measurement &amp; Modeling</td>
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<td>HYD 124</td>
<td>Plant-Water-Soil Relationships</td>
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<td>HYD 142</td>
<td>Systems Hydrology</td>
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<td>HYD 143</td>
<td>Ecohydrology</td>
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<td>HYD 145</td>
<td>Water Science &amp; Design</td>
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<td>HYD 146/GEL 156</td>
<td>Hydrogeology &amp; Contaminant Transport</td>
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<tr>
<td>HYD/EBS 147</td>
<td>Runoff, Erosion &amp; Water Quality Management</td>
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<tr>
<td>ECI 141</td>
<td>Engineering Hydraulics</td>
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<tr>
<td>ABT/SAF 165</td>
<td>Irrigation Practices for an Urban Environment</td>
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</table>

**Depth Subject Matter Subtotal** 45-57

### Restricted Courses

Upper division courses to supplement or expand areas of student interest selected with approval of advisor. 16-26

**Restricted Courses Subtotal** 16-26

**Total Units** 132-154