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>
</tr>
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<tbody>
<tr>
<td>Preparatory Subject Matter</td>
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<tr>
<td>Biological Science</td>
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<td>BIS 002A</td>
<td>Introduction to Biology: Essentials of Life on Earth</td>
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<td>Introduction to Biology: Principles of Ecology &amp; Evolution</td>
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<td>CHE 002C</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>MAT 022A</td>
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<td>MAT 022B</td>
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<td>Physical Geology</td>
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<td>ECI 114 or STA 130 series:</td>
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<tr>
<td>ECI 114</td>
<td>Probabilistic Systems Analysis for Civil Engineers</td>
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<tr>
<td>or STA 130A &amp; STA 130B</td>
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<td>HYD 134</td>
<td>Aqueous Geochemistry</td>
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<td>HYD 141</td>
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<td>HYD/EBS 144</td>
<td>Groundwater Hydrology</td>
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<td>ESM 108</td>
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<td>or HYD 151</td>
<td>Field Methods in Hydrology</td>
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<td>HYD 150</td>
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<td>ARE 147</td>
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<td>ESP 161</td>
<td>Environmental Law</td>
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Preparatory Subject Matter Subtotal: 71

Depth Subject Matter

Choose one: 4

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<td>ENG 103</td>
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Hydrology

Hydrology, Bachelor of Science
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<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ESP 169</td>
<td>Water Policy &amp; Politics</td>
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<tr>
<td>ESM 121</td>
<td>Water Science &amp; Management</td>
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**GIS & Remote Sensing**

Choose one:

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<th>Course Title</th>
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<tr>
<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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<td>ESM 186</td>
<td>Environmental Remote Sensing</td>
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**Hydrologic Science**

Choose three:

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<tbody>
<tr>
<td>HYD/ESM/ABT 110</td>
<td>Irrigation Systems &amp; Water Management</td>
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<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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<td>HYD/EBS 147</td>
<td>Runoff, Erosion &amp; Water Quality Management</td>
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<td>ECI 141</td>
<td>Engineering Hydraulics</td>
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<td>ABT/SAF 165</td>
<td>Irrigation Practices for an Urban Environment</td>
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**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