



# AMERICAN INSTITUTE OF HYDROLOGY EDUCATIONAL CRITERIA

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## BASIC REQUIREMENTS

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Completion of a full course of study leading to a bachelor's or higher degree at an accredited college or university with a major in hydrology, physical or natural science or engineering.

The study must have included a minimum of:

- 5 semester hours or 8 quarter hours in Chemistry
- 5 semester hours or 8 quarter hours in Physics
- 5 semester hours or 8 quarter hours in Differential and Integral Calculus
- One Basic Course in surface or groundwater hydrology (3 semester hours or 4 quarter hours credits)
- 25 semester hours or 37 quarter hours in the specialty areas.

## SPECIALTY REQUIREMENTS

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Completion of 25 semester hours or 37 quarter hours of which at least 10 semester or 15 quarter hours must come from Category I listing of courses and the rest from a combination of Category II and Category III listing of courses. 20 semester hours or 30 quarter hours must be in the third or fourth year or graduate course studies.

## CATEGORY I

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Courses in hydrology, hydrogeology, or water quality - minimum of 6 semester or 10 quarter hours in Category 1.A, 1.B or 1.C, depending on the area of specialization (surface, groundwater or water quality).

## CATEGORY II

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Courses in allied subjects in which hydrology, hydrogeology or water quality constitutes more than 10 percent of the course work - minimum of 9 semester or 14 quarter hours. Courses listed in Category I that are not used to satisfy Category I requirements can count toward Category II requirements. Courses such as climatology, fluvial geomorphology, limnology, meteorology, plant-water relationships, soil and water conservation, soil physics, water resource management, well drilling, well logging, wetland ecology or management, and so forth.

## CATEGORY III

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Supplemental courses - minimum of 6 semester or 9 quarter hours. These courses would include subjects such as economics, geology, geophysics, law, planning, remote sensing, statistics, land and water policy, resource management, water administration, and so forth.

**Note:** The course titles listed are only indicative and **are not all inclusive**. For all courses that contained hydrology material this is not reflected in the title, applicants should provide a course description or syllabus that shows content. In the Category II and III courses there is considerable latitude and the courses below are only for general reference.

**Category I. A****Titles of Courses in Hydrology**

Advanced Geohydrology  
 Advanced Ground-Water Hydrology  
 Advanced Hydraulics  
 Advanced Hydraulic Problems  
 Advanced Hydrologic Analysis  
 Advanced Hydrologic Analysis & Design  
 Advanced Hydrologic Laboratory  
 Advanced Hydrology  
 Advanced Water Chemistry  
 Agricultural Hydrology  
 Analytical Geohydrology  
 Applied Hydraulics  
 Applied Hydrology  
 Applied Subsurface Hydrology  
 Arctic Hydrology  
 Arid Zone Hydrology

Deterministic Methods in Hydrology  
 Drainage & Irrigation  
 Dynamic Hydrology  
 Dynamics of Flow Systems of the Earth

Engineering Hydrology

Field Hydrology  
 Floods & Droughts  
 Flow in Porous Media  
 Fluid Flow in Porous Media  
 Fluid Mechanics  
 Fluvial Hydraulics  
 Forest Hydrology  
 Free Surface Flows

Geohydrology  
 Geohydrology of Drainage Basins  
 Ground-Water Hydrology

Hydraulics  
 Hydraulics of Open Channel  
 Hydraulics of Pipeline  
 Hydrochemistry  
 Hydrodynamics of Free Surface Flows  
 Hydrologic Forecasting  
 Hydrologic Investigations  
 Hydrologic Measurements  
 Hydrologic Models  
 Hydrologic Processes & Cybernetics  
 Hydrologic Properties of Soils  
 Hydrologic Simulation  
 Hydrologic Systems & Analysis

Hydrologic Transport Processes  
 Hydrology, I & II  
 Hydrology Field Camp  
 Hydrology Laboratory  
 Hydrology for Engineers  
 Hydrology of Lakes & Reservoirs  
 Hydrology Seminar  
 Hydrometeorologic Observations  
 Hydrology, Water Control  
 Hydrometeorology  
 Hydrosience

Land-Mass Hydrology

Numerical Methods in Hydrology

Open Channel Flow

Physical Hydrology

Range Hydrology  
 River Hydrology  
 Rural Hydrology

Seepage  
 Seminar in Geohydrology  
 Seminar in Hydrology  
 Simulations Methods in Surface & Subsurface  
 Snow Hydrology  
 Soil Hydrology  
 Soil Water Movement  
 Special Topics in Hydraulics & Fluid Mechanics  
 Special Topics in the Hydrology of Ground Water & Low Flows  
 Statistical Methods in Hydrology  
 Stochastic Methods in Hydrology  
 Stream Analysis  
 Subsurface Fluid Dynamics  
 Surface Water Dynamics  
 Surface & Subsurface Hydrology  
 Surface Water Hydrology  
 Surface Water Quality & Analysis

Urban Hydrology  
 Use of Computers in Hydrology

Water Chemistry  
 Water Resources Calculations  
 Watershed Hydrology  
 Watershed Modeling

**Category I. B****Titles of Courses in Groundwater Hydrology (Hydrogeology)**

Advanced Ground Water Geology  
 Advances Ground Water Problems  
 Advanced Hydrogeology  
 Analysis of Ground Water Flow  
 Analysis of Ground Water Systems  
 Analytical Methods in Ground Water  
 Analytical Techniques of Ground Water Flow  
 Application of Hydrogeology Concepts  
 Applied Hydrogeology  
 Appraisal and Development of Ground Water  
 Aquifer Mechanics  
 Assessment of Ground Water Resources

Case Histories in Hydrogeology  
 Chemistry of Ground Water  
 Computer Modeling of Hydrogeologic Systems  
 Contaminant Hydrogeology

Development of Ground water Resources

Environmental Hydrologic Tracers

Field Hydrogeology  
 Field Methods in Hydrogeology  
 Field Methods in Contaminant Hydrogeology  
 Fundamental of Well Test Analysis

Geology of Underground Water  
 Ground Water  
 Ground Water & Engineering Geology  
 Ground Water & Seepage  
 Ground Water Chemistry  
 Ground Water Contamination  
 Ground Water Dating  
 Ground Water Development  
 Ground Water Exploration and Development  
 Ground Water Flow & Drainage Design  
 Ground Water Flow Systems  
 Ground Water Geology  
 Ground Water Hydraulics  
 Ground Water Investigations  
 Ground Water Management  
 Ground Water Pollution  
 Ground Water Problems in Mining  
 Ground Water Resources Evaluation and Modeling

Ground Water Resources Management

Hydrogeochemistry Seminar  
Hydrogeochemistry  
Hydrogeologic Mapping  
Hydrogeologic Measurements  
Hydrogeologic Problems  
Hydrogeologic Systems  
Hydrogeology I & II  
Hydrogeology & Human Affairs  
Hydrogeology of Ground Water Pollution & Protection  
Hydrothermal Fluids

Intro to Ground Water  
Intro to Ground-Water Geology

Laboratory Methods in Hydrogeology

Mathematical Models of Hydrogeologic Systems  
Mathematics of Ground Water Movement  
Mechanics of Flow Through Soils  
Mechanics of Underground Fluids  
Methods of Ground Water Investigations  
Modeling Subsurface Flow Systems  
Monitoring Network Design

Numerical Methods in Hydrogeology  
Numerical Methods in Subsurface Hydrology

Optimal Ground Water Management

Paleohydrogeology  
Physics of Underground Fluids  
Pollution of Ground Water  
Principles of Ground Water  
Principles of Hydrogeology  
Prospecting for Ground Water

Quantitative Determination of Aquifer Performance

Quantitative Ground Water Hydrology  
Quantitative Methods in Hydrogeology

Regional Ground Water Geology

Sedimentary Aquifers  
Seminar in Ground Water  
Seminar in Hydrogeology  
Solutions to Ground Water Problems  
Statistical Methods in Hydrogeology  
Subsurface Hydrogeologic Methods  
Subsurface Water Quality

Theory of Flow Through Porous Media

Theory of Ground Water Flow  
Theory of Ground Water Motion/Movement  
Transient Flow of Ground Water  
Theory of Ground Water Motion/Movement  
Transient Flow of Ground Water  
Transient Phenomena in Natural Porous Media

Underground Fluids

Water Well Analysis  
Water Well Design  
Water Wells

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**Category I. C**  
**Titles of Courses in Water Quality**

Advanced water chemistry  
Analysis and design of Wastewater treatment  
Aquatic chemistry  
Aqueous geochemistry  
Assessing ecological effects of pollution

Biological and chemical processes for wastewater treatment

Chemistry of aquifer systems

Chemistry and biology of natural waters

Ecology of polluted water  
Environmental water chemistry  
Environmental chemistry  
Environmental health aspects of ground water systems

Geochemistry of aqueous systems  
Geochemistry of natural water  
Geochemistry of pollution  
Geochemistry of river management  
Geochemistry of sediments

Introduction to geochemistry

Land application of wastewater  
Limnology  
Low-temperature geochemistry

Modeling aquatic environments

Sanitary engineering  
Solute transport geochemistry  
Stream ecology

Water pollution biology  
Water pollution control  
Water quality  
Water quality analysis  
Water quality control  
Water quality dynamics  
Water quality engineering  
Water quality management  
Water quality investigations  
Water quality measurements  
Water quality for engineers  
Water supply and pollution control  
Water supply and treatment  
Water supply and wastewater collection  
Water supply and wastewater disposal  
Water Well Design  
Water Wells  
Well Test Analysis

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**Category II. A & B**  
**Hydrology and Hydrogeology**


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Advanced Hydrologic Engineering  
 Advanced Mechanics of Fluids  
 Advanced Sanitary Engineering  
 Advanced Subsurface Fluids Engineering  
 Advanced Meteorology  
 Applied Environmental Geology  
 Applied Physics  
 Applied Meteorology  
 Applied Environmental Geology

Climate and Weather  
 Conservation of Aquatic Resources

Drainage & Irrigation Engineering  
 Drainage & Irrigation Practice  
 Drainage Systems Design  
 Drilling Engineering  
 Drilling Practice & Well Completion

Ecology of Polluted Water  
 Engineering Geology  
 Engineering Hydraulics  
 Environmental Geochemistry  
 Environmental Geology  
 Environmental Health Aspects of Ground Water Systems  
 Evapotranspiration

Fluvial Geomorphology  
 Fluid Dynamics  
 Flood Control Engineering  
 Forest influences  
 Fundamental of Geological Engineering

Geochemistry of Aqueous Systems  
 Geochemistry of Natural Water  
 Geochemistry of Pollution  
 Geography of River Development  
 Geological Engineering  
 Geological Oceanography  
 Geology in Engineering Construction  
 Geology of Fluids  
 Geology in Engineering Construction  
 Geomorphology  
 Ground-water Engineering  
 Ground-water Protection

Hydraulic Engineering  
 Hydrochemical Systems  
 Hydrography

Hydrologic & Hydraulic Engineering  
 Hydrodynamics  
 Hydromechanics

Land Application of Wastewater  
 Limnology  
 Low-Temperature Geochemistry

Meteorology (micro, dynamic)  
 Microclimatology

Ocean & Coastal Engineering

Permafrost  
 Petroleum Engineering  
 Petroleum Geology  
 Petroleum, Natural Gas & Ground Water  
 Physical Aspects of Sedimentology  
 Physical Geology  
 Physical Oceanography  
 Physiography  
 Physics of Soil Water Movement  
 Plant/Water Relationship  
 Pollution of Natural Waters  
 Public Water Supplies

Quaternary (Surficial) Geology

Remote Sensing of the Environment  
 River & Harbor Engineering  
 Road Drainage  
 Rural Water Supplies

Sanitary Engineering  
 Sedimentation  
 Sediment Transport  
 Small Watershed Engineering  
 Soil & Water Conservation  
 Soil Drainage  
 Soil Moisture  
 Soil, Water & Air  
 Soil Water Dynamics  
 Solute Transport Geochemistry  
 Stream Ecology  
 Stream Pollution

Thermodynamics

Urban Water Systems

Water Analysis  
 Water Chemistry Laboratory  
 Water Conservation  
 Water Microbiology  
 Water Pollution Control

Water Power Engineering  
 Water Quality Analysis  
 Water Quality Dynamics  
 Water Quality in Water Resources Development  
 Water Quality Investigations & Control  
 Water Quality Measurements  
 Water Quality Seminar  
 Water Resources  
 Water Resources Development  
 Water Resources Engineering  
 Water Resources Instrumentation  
 Water Resources Investigation & Development  
 Water Resources Management  
 Water Resources Microbiology, Bacteriology  
 Water Resources Science and Technology  
 Water Analysis & Problems  
 Watershed Management  
 Water Supply & Pollution Control  
 Water Supply & Treatment  
 Water Supply & Wastewater Collection  
 Water Supply & Wastewater Disposal  
 Water Supply & Engineering  
 Water Supply Geology  
 Water Supply - Water Wells  
 Water Utilization  
 Waves & Coastal Processes  
 Well Completion & Simulation  
 Well Drilling  
 Well Logging

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**Category II. C**  
**Allied Courses in Water Quality**


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Algae physiology  
 Analytical chemistry  
 Aquatic entomology  
 Aquatic plants

Biology of algae

Ecology of animal plankton  
 Ecology of fish

Freshwater algae

General microbiology

Ichthyology

Microbial ecology

Organic chemistry

Production biology of fishery environments

Wetland Ecology

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**Category III. A, B & C**  
**Titles of Supplemental Courses**

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Advanced Geology  
Advanced Soil Science  
Agricultural Engineering  
Air-photo Interpretation  
Analysis & Design of Water Res. Systems

Aquatic Ecology for Nonbiologists  
Aquatic Environments

Bioclimatology  
Biology of Water & Water Treat. Res.  
Biostratigraphy

Chemical Properties of Soils  
Chemistry of Soil & Water Systems  
Civil Engineering Technology  
Conservation of Natural Resources

Earth Science  
Earth & Physical Sciences  
Ecological Dimensions of Environ. Impact  
Ecology  
Economics of Water Supply  
Engineering Properties of Soils

Science & Government  
Seminar in River Basin Planning  
Seminar in Water Resources  
Sewage and Sewage Treatment  
Soil Mechanics  
Soil Physics/Chemistry  
Soil Rock Behavior  
Soil Science  
Soils & Environmental Pollution  
Soils & Land Use  
Soils Mapping & Evaluation  
Stratigraphy  
Stream Sanitation

Environmental Conservation  
Environmental Economics  
Environmental Health  
Environmental Health Engineering  
Environmental Impact Analysis  
Environmental Impact Statement  
Environmental law, Toxic Subs. & Conservation  
Environmental Legislation  
Environmental Management  
Environmental Planning  
Environmental Pollution Control  
Environmental Quality Management  
Environmental Radiation  
Environmental Toxicology  
Exploration Geology  
Exploration Geophysics

Field Geology

General Geography  
General Geology  
Geochemistry  
Geology for Engineers  
Geophysical Exploration  
Geophysical Prospecting  
Geophysics  
Glacial Geology  
Government & Natural Resources  
Ground Water Law

Heat Transfer  
Hydrotechnical Structures  
Hydropower Engineering

Intro to Statistical Methods  
Intro to Water Resources

Structural Geology  
Subsurface Exploration  
Stream Sanitation  
Structural Geology  
Subsurface Exploration  
Surface & Subsurface Geology

Wastewater Treatment  
Water Law  
Water Resources Economics  
Water Resources Institutions & Policies  
Water Resources Planning

Land & Water Use Policy  
Land Use Controls  
Lithology

Man, Chemicals & Environment  
Maps & Airphotos  
Marine Environments/Ecology  
Marine Engineering  
Marine Geology  
Mining Geology  
Modeling & Analysis of Environ. Systems

Natural Resources Economics  
Natural Resources Law  
Natural Resources Management  
Natural Resources Planning  
Numerical Methods in Geoscience

Optimization & Simulation of Water Resources Systems

Petrography  
Petrology  
Petroleum  
Photogeology  
Physical Climatology  
Physics of Soil & Water  
Principles of Electric Exploration  
Protection of Natural Resources  
Public Health Engineering

Radiochemical Laboratory  
Regional Geology  
Reservoir Engineering  
Reservoir Operation

Water Resources Systems  
Simulations  
Water Quality & Water Resources Development  
Water Rights Law  
Watershed Instrumentation  
Watershed Problems/Operations  
Water, Society & the Environment  
Water Studies Seminar  
Waterways Engineering  
Waterways & Ports

**EDUCATIONAL REQUIREMENTS**

Refer to the attached list of courses and your transcripts. Categorize your college and university courses including any postgraduate courses and credits received even though they may not have led towards a degree. The requirements for chemistry, physics and calculus are 8 quarters, or 5 semester hours in each category; and is usually two courses. Category I requirements are 15 quarter, or 10 semester hours; Category II requirements are 13 quarter or 9 semester hours; and Category III requirements are 9 quarter or 6 semester hours.

In the space below, looking at your transcripts, list your courses for the various categories, Please feel free to include the sheet, or a copy of it with your application.

<b>Category</b>	<b>Course Title</b>	<b>Semester/ Quarter Hours</b>	<b>Category</b>	<b>Course Title</b>	<b>Semester/ Quarter Hours</b>