

Hydropower Courses

HYDRO601	Principles of Applied Hydrology
HYDRO602	River System Analysis
HYDRO603	Hydraulic Structures
HYDRO604	Waterways
HYDRO605	Hydropower Production & Marketing
HYDRO606	Water Resources Optimization
HYDRO607	Environmental Impacts & Mitigation

The Hydropower courses will be available in 2010

Hydropower Courses

Principles of Applied Hydrology

Course content includes linear systems in hydrology; measurements and statistics and series handling of flow; groundwater and base flow; groundwater reservoirs and natural regulation; and numerical simulation of groundwater systems. Catchments hydrology and runoff estimation; channel routing techniques; reservoir routing and design; sediment transport; and sedimentation and sediment bypassing.

Flow statistics and frequency; stochastic processes in hydrology; correlation in flow series and series extension; stochastic flow models; and generation of flow series for river systems.

Hydropower Courses

River System Analysis

Course content includes Saint-Venants flow equations and computational fluid mechanics (CFD); direct numerical simulation (DNS) of dam break and other flood waves with HEC; probable maximum flood (PMF) estimation; and computer simulation of river system flow series.

For registration, course fees and additional information

please contact: res@res.is or visit: www.res.is/graduateschool/page/course_catalog

Available in 2010

Course Number: HYDRO601
Course Duration: 3 weeks
ECTS Credits: 6
Time Schedule: June 2010
Course Fees: TBA
Lecturing Professor: TBD

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Hydropower Courses

Hydraulic Structures

Course content includes varied flow in open channels; wave problems in lakes and channels; transient pressure surges; spillways, locks and gates. Dam engineering (loads and stresses); rock-fill, embankment, concrete gravity, buttress, and arch dams.

Hydropower Courses

Waterways

Course content includes rock mechanics. Tunnel and cave structures. Hydraulic design of headrace, tailrace and diversion aqueducts and waterways, including ice and sediment handling structures and bypassing.

Students will conduct case study analyses from Iceland and elsewhere, including detail account of the design and hydraulics of the Karahnjukar Power Plant (690 MW).

Available in 2010

Course Number: HYDRO603
Course Duration: 2 weeks
ECTS Credits: 4
Time Schedule: July 2010
Course Fees: TBA
Lecturing Professor: TBD

Available in 2010

Course Number: HYDRO604
Course Duration: 3 weeks
ECTS Credits: 6
Time Schedule: August 2010
Course Fees: TBA
Lecturing Professor: TBD

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Hydropower Courses

Water Resources Optimization

Course content includes principles of optimization and construction of an objective function; local optimization of the tunnels; global optimization of hydropower schemes; solution by genetic algorithms and evolutionary methods; the HYDRA program; and student optimization project.

Hydropower Courses

Hydropower Production & Marketing

Course content includes powerhouse equipment and layout. Turbine selection and flow control - hydraulics of impulse and reaction turbines, including Pelton; cross-flow; propeller (i.e. Kaplan); Francis; and kinetic energy (free-flow) turbines; spiral and draft tube hydraulics.

Cavitation. Specific speed and turbine sizing and selection. Runner design. Unsteadiness in hydraulic machines. Gearing and power generator design. Automatic control and control systems. Power marketing.

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Available in 2010

Course Number: HYDRO605
Course Duration: 2 weeks
ECTS Credits: 4
Time Schedule: September 2010
Course Fees: TBA
Lecturing Professor: TBD

Available in 2010

Course Number: HYDRO606
Course Duration: 3 weeks
ECTS Credits: 6
Time Schedule: August 2010
Course Fees: TBA
Lecturing Professor: TBD

Hydropower Courses

Environmental Impacts & Mitigation

Course content includes principles of nature conservation, legislative measures, and environmental assessments. Downstream effects of dams; mitigation measures and sustainability.

Available in 2010

Course Number: HYDRO607

Course Duration: 1 week

ECTS Credits: 2

Time Schedule: September 2010

Course Fees: TBA

Lecturing Professor: TBD

For registration, course fees and additional information

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