

PONTIFICIA UNIVERSIDAD CATÓLICA DE CHILE
COLLEGE OF ENGINEERING
DEPARTMENT OF ELECTRICAL ENGINEERING
ABET COURSE SYLLABI

ICH2574 HYDRAULIC DESIGN

Credits and contact hours:	10 UC credits/ 10 hours (3 h. Lectures and 7 h. Independent learning experiences)
Instructor's name:	Ricardo González
Course coordinator's name	To be defined
Textbook:	Hidráulica aplicada al diseño de obras. RIL Editores, Mery, H. 2013.
Course Catalog Description:	Capstone course for civil hydraulic engineers oriented to the analysis and design of hydraulic Works, applying the basic principles of hydraulic and fundamentals of civil engineers.
Prerequisite Courses:	ICH2114 Hydraulic Engineering / ICH2204 Hydrology
Co-requisite Courses:	None
Status in the Curriculum:	Elective crr2009 and Required crr2013
Course Learning Outcomes:	<ol style="list-style-type: none">1) Applications of the fundamentals of hydraulics to engineering projects, including:<ol style="list-style-type: none">1. Estimation of hydraulic losses, pipe and pump selection of closed conduit systems.2. Project of an open channel system, including discharges.3. Project of a spillway and its energy dissipation works.4. Designs and drawing of projects2) Presentation of projects including technical report (introduction, description, scope, design criteria, dimensions, material estimations, and technical references), design drawings and costs.
Relation of Course to ABET Criteria:	<ol style="list-style-type: none">b. Design and conduct experiments: analyze and interpret datac. Design a system, component, or processd. Multidisciplinary teamse. Identify, formulate, and solve engineering problemsf. Professional and ethical responsibilityg. Effective communicationh. Broad education necessary for global, economic, environmental and societal contexti. Recognition of the need for, and an ability to engage in life-long learning

Topics covered:

In the course the students develop a project taken from reality, with emphasis on the design of hydraulic works. The level corresponds to basic engineering design with some more detailed aspects.

Each project is divided into 4 parts and addressed in consecutive sessions, 2 to 4 sessions depending on the content and complexity. The development and evaluation of the work is done mainly during school hours, in order to encourage interaction between teacher and students.

For each part, during the first session the issue is discussed in detail, the specific objectives, design criteria are explained; calculation methodologies and some technical references are recommended.

In turn, the last session is used to present the proposal by Professor solution and generate a technical discussion; at the end of this session, students must submit their own calculation to finish evaluation. During each class is partially evaluated the students' work.

At the end of the semester each student prepares a final design report, to include introduction, project description, objectives and scope, design criteria, calculations, basic takeoffs of recommended works, sketches enough so they can develop basic plans, conclusions / articles and references used.