

Principles of Hydraulic Engineering and Open Channel Flow



This course is for people with an interest in performing hydraulic calculations and developing an understanding of the principles of hydraulic engineering. The general principles of basic fluid mechanics are reviewed and their application to pipe and open channel flows is discussed. The focus of the course is on steady flows of water.

This is a practical course, and the lecture material is supported with practical applications, worked examples and laboratory exercises.

IWES is the largest and most successful continuing education program for professionals responsible for industry environmental performance in Australia.

ISSUES ADDRESSED

DAY 1

Review of general principles

- Conservation of mass, momentum and energy and the Bernoulli principle
- Basic definitions: flow depth, bed elevation, total head, specific energy

Open channel hydraulics of short, frictionless transitions

- Application of the Bernoulli principle
- Broad-crested weir and gauging devices
- Flow transitions (channel contraction, divergence, drop, step,...etc)
- Specific energy and critical flow conditions

Laboratory practicals

- Hydraulics Laboratory visit

DAY 2

Applications to real fluid flows

- Hydraulic jump and energy dissipation
- Hydrodynamic forces on structures
- Flow resistance calculations & uniform equilibrium flow in channels

Hydraulic engineering of long channels

- Flow resistance in pipes, conduits and open channels
- Uniform equilibrium flows in open channels

Laboratory practicals

- Hydraulics Laboratory visit

DAY 3

Basics of hydraulic engineering of pumps

- Characteristic curves
- Application to a pump installed in a pipeline

Introduction to sediment motion and transport

- Shear stress and shear velocity
- Inception of sediment motion

Dimensional analysis and similitude

- Dimensional Analysis
- Physical modelling

Case studies

WHAT DO YOU GET?

- Hardcopy course notes and USB
- Access to a world leading expert in hydraulic engineering
- Real Australian and international case studies and examples
- 2 Half-day sessions in a leading hydraulics laboratory

WHO SHOULD ATTEND ?

Scientists and engineers who wish to gain some knowledge and expertise in basic fluids and hydraulic engineering.

The Presenter:



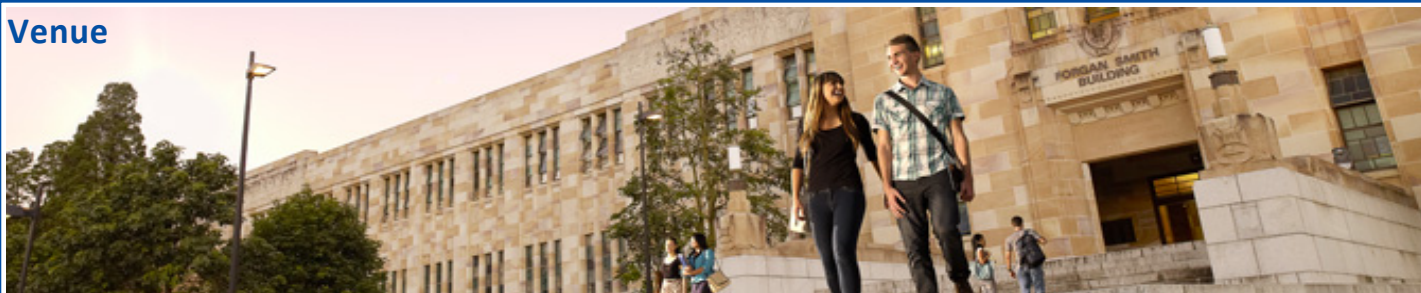
Hubert Chanson

Hubert Chanson is a Professor in Civil Engineering, Hydraulic Engineering and Applied Fluid Mechanics at The University of Queensland. His research interests include design of hydraulic structures, two-phase flows, coastal hydrodynamics, water resources, environmental fluid mechanics and natural resources. He has authored 18 books including the textbook "The Hydraulics of Open Channel Flow: An Introduction". He received the 13th Arthur Ippen award for outstanding achievements in hydraulic engineering from the

International Association for Hydraulic Engineering and Research.

Hubert developed design standards for stepped spillways and energy dissipators that are used in North America, Asia, Europe and Australia. He is an active expert consultant in hydraulic engineering, hydraulic structures and two-phase gas-liquid flows. He has been invited to deliver numerous keynote lectures in Europe, Asia, America and Australia, and he has presented several industry short courses in Australia and overseas including Taiwan, Japan and Italy.

Venue



The University's main campus at St Lucia is set on a magnificent 114-hectare site bounded on all sides by the Brisbane River, seven kilometres from the Brisbane CBD. The campus has expansive landscaped grounds, three lakes, an aquatic centre, tennis courts, eight athletics ovals with a 600-seat grandstand, and facilities for elite rowing. The campus fans out from a 1930s, heritage-listed sandstone Cloister enclosing the Great Court.

Cost of Registration 3 day course (incl.GST) - Register pre September 18 \$2480 after September 18 \$2680

Discounts for multiple delegates

Discounts for organisations registering multiple delegates 2 - 3 = 5% 4 - 5 = 10% 6 and over = 15%
 All registrations are attached to confirm this discount as per Item 3 in the 'terms and conditions'

Registration Details

First name Dr Mr Mrs Ms _____ Last name _____

Organisation _____ Address _____

Phone _____ Email _____

- I have dietary requirements. Details _____
- Please add my contact details to the IWES enews so I can receive updates on upcoming events.
- Please send me more information on WaterAid Australia.

Send completed form to IWES by Email: info@iwes.com.au

UQ ABN: 63 942 912 684

TERMS AND CONDITIONS

1. Cancellation of registration less than 3 weeks before the starting date of a course(s) will incur a cancellation fee of 50% of the course price. Alternatively, delegates may send a substitute.
2. While every attempt will be made to deliver all advertised courses, IWES reserves the right to cancel individual courses at short notice.
3. Only registrations submitted and invoiced in one batch qualify for multiple registration discounts.



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