hkpc Academy 生產力學院

CONNECTION TECHNOLOGY 裝備未來 FUTURESKILLS

Intermediate Wastewater Treatment Plant (WWTP) Hydraulics Training

Training

The design of a wastewater treatment plant (WWTP) involves mainly process design and hydraulic design, which the latter has received much less training attention than process design. At the same time, to meet more challenging environmental requirements, especially those due to climate change, WWTP designers are adopting new treatment processes with more stringent hydraulic requirements. This Intermediate Course is a follow up of the Introductory Course on WWTP Hydraulics in August 2021, as most participants of which are supported for further technical training.

Programme code	10013329
Date and time	28 Sept 2022 9:30 - 17:30 19 Oct 2022 9:30 - 17:30
Venue	Classroom 121 OR Online via Zoom (Will subject to tightening of Social distancing measures)
Medium	Cantonese with English terminology
Course fee	HK$4,800
Remarks	Participants who have fulfilled 75% attendance will be awarded an e-certificate of attendance issued by the Hong Kong Productivity Council

Course Description

This course brings together the commonly used hydraulic elements with specific applications to wastewater treatment plants. It addresses first problems in pipe and open channel flows with worked examples, such as Sludge Flows and Flow Measurements, Dilution and Dispersion of Oceanic Outfalls, Self-cleansing Velocity Design and Sedimentation Processes.

WHO SHOULD ATTEND?

This course is targeted at civil and environmental engineering professionals, responsible for project management, planning, investigation, design, construction, operation and management of wastewater infrastructure. It is also relevant to hydraulic researchers engaged in optimising wastewater treatment plant design and operation.

Supporting Organisations (In arbitrary order)

CIWEM Chartered Institution of Water and Environmental Management Hong Kong Branch

HKIE THE HONG KONG INSTITUTION OF ENGINEERS 香港工程師學會 Environmental Division 環境分部

IAHR AIRH The HK Chapter of the International Association for Hydro-Environment Engineering and Research

Inquiries to Ms Mandy LAM | +852 2788 5023 | mandylam@hkpc.org

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Course Outline

Day 1

Lecture 1 – Pipe Flows Losses
- Laminar, Transitional, Turbulent Flows
- Frictional Losses
- Local Losses

Lecture 2 – Manifold Hydraulics
- Dividing Flow Manifolds
- Multiport Diffuser Outfall
- Miller's Generalised Treatment

Lecture 3 – Open Channel Flows
- Uniform Flows
- Gradually Varied Flows
- Rapidly Varied Flows

Lecture 4 – Spatially Varied Flows
- Increasing Discharges
- Decreasing Discharges
- Side Weirs

Day 2

Lecture 5 – Sludge Flows & Flow Measurements
- Rheological Properties of Sludge (Non-Newtonian Fluid)
- Head Loss in Laminar, Transitional, Turbulent Flows
- Wastewater Flow Measurements

Lecture 6 – Oceanic Outfalls
- Initial Dilution of Buoyant Jets
- Subsequent Dilution and Dispersion
- Hydraulic Modelling Studies

Lectures 7 – Self-Cleaning Velocity Design
- Empirical Approach
- Sediment Transport Approach
- Experience from HATS tunnels

Lecture 8 – Sedimentation
- Gravity Settling Theory
- Means to enhance settling
- Hydraulic Modelling for Clarifier Optimisation

TRAINER

Ir Prof. CHAN Pak-Keung taught a 2-day CPD course "Sanitary Sewers: Principles and Applications" for HKPC in July 2019 and a 1-day course "An Introduction to Wastewater Treatment Plant (WWTP) Hydraulics" in August 2021. A follow up of the latter will be conducted by Ir Prof. CHAN in 2022 to bridge the knowledge gaps for civil and environmental engineering professionals with knowledge in hydraulic design.

Ir Prof. CHAN has over thirty years of experience in Civil and Environmental Engineering. He had spent sixteen years working as a Chief Engineer / Assistant Director in Drainage Services Department (DSD) amongst flood management, major wastewater engineering projects, the Research & Development initiatives of DSD as well as operation and maintenance for sewerage & drainage systems. Since 2015, Ir Prof. CHAN has been active in teaching university programmes and CPD courses.

Enrolment Method

1. Scan the QR code to complete the enrolment and payment online.

OR

2. Mail the crossed cheque with payee name "Hong Kong Productivity Council" in HK dollar and the application form should be mailed to Hong Kong Productivity Council, 2/F, HKPC Building, 78 Tat Chee Avenue, Kowloon (ATTN: Ms Mandy LAM). **Please indicate the course name and course code on the envelope.**

Enrol HERE

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