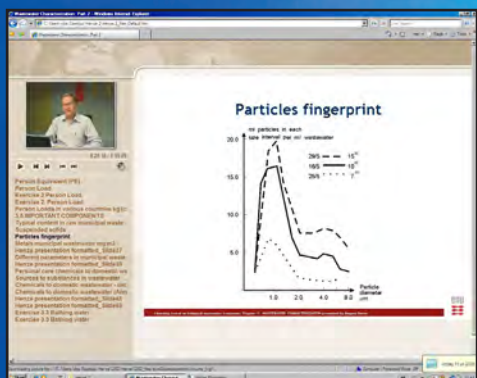


Online Course on Biological Wastewater Treatment: Principles, Modeling and Design



Over the past twenty years, the knowledge and understanding of wastewater treatment has advanced extensively and moved away from empirically-based approaches to a fundamentally-based 'first principles' approach embracing chemistry, microbiology, physical and bioprocess engineering, and mathematics. Many of these advances have matured to the degree that they have been codified into mathematical models for simulation by computers. For a new generation of young scientists and engineers entering the wastewater treatment profession, the quantity, complexity and diversity of these new developments can be overwhelming, particularly in developing countries where access is not readily available to advanced level courses in wastewater treatment. This online course seeks to address that deficiency. It assembles and integrates the postgraduate course material of a dozen or so professors from research groups around the world that have made significant contributions to the advances in wastewater treatment.

This internet-based curriculum in biological wastewater treatment consists of a more than 40 hours of video-recorded lectures by the author professors all compiled into a DVD package available to those registered for the online course, and of the textbook, lecture handouts, and tutorial exercises for students' self-study. Upon completion of this curriculum, the modern approach of modelling and simulation to wastewater treatment plant design and operation - be it activated sludge, biological nitrogen and phosphorus removal, secondary settling tanks or biofilm systems - can be embraced with deeper insight, advanced knowledge and greater confidence.



Course contents

- **Wastewater Treatment Development**
M. Henze, M.C.M. van Loosdrecht, G.A. Ekama and D. Brdjanovic
- **Microbial Metabolism**
Y. Comeau
- **Wastewater Characterization**
M. Henze and Y. Comeau
- **Organic Matter Removal**
G.A. Ekama and M.C. Wentzel
- **Nitrogen Removal**
G.A. Ekama and M.C. Wentzel
- **Innovative Nitrogen Removal**
M.C.M. van Loosdrecht
- **Phosphorus Removal**
M.C. Wentzel, Y. Comeau, G.A. Ekama, M.C.M. van Loosdrecht and D. Brdjanovic
- **Pathogen Removal**
C.P. Gerba
- **Aeration and Mixing**
M.K. Stenstrom and D. Rosso
- **Toxicity**
J.H.G. Orozco
- **Bulking Sludge**
M.C.M. van Loosdrecht, A.M. Martins and G.A. Ekama
- **Final Settling**
I. Takacs and G.A. Ekama
- **Membrane Bio-reactors**
S. Judd, B. Kim and G. Amy
- **Modelling Activated Sludge Processes**
M.C.M. van Loosdrecht, G.A. Ekama, M.C. Wentzel, D. Brdjanovic and C.M. Hooijmans
- **Process Control**
G. Olsson
- **Anaerobic Wastewater Treatment**
J.B. van Lier, N. Mahmoud and G. Zeeman
- **Modelling Biofilms**
E. Morgenroth
- **Biofilm Reactors**
E. Morgenroth

Course provider: UNESCO-IHE Institute for Water Education
Course coordinator: Dr. Carlos Manuel Lopez Vazquez
Duration: 18 weeks
Start date: 01 August 2010 • End date: 30 November 2010

Application to: IWA Publishing or UNESCO-IHE
Fee: Euro 675

