

Hydroinformatics uses simulation modelling and information and communication technology to help in solving problems of hydraulics, hydrology and environmental engineering for better management of water-based systems. Main application areas are flood and river basin management, urban and coastal systems.

Why Hydroinformatics is so important

Increasingly, new computer based modelling tools, Web-based information and knowledge systems, GIS are used to provide support for decision making for flood and river management, urban drainage and supply networks, estuaries and coastal waters, at all levels of management and operations.

There is a growing need for professionals and managers to appreciate and work with these new technologies and tools. The following questions need to be answered:

- what are the most appropriate modelling systems and tools?
- how to construct reliable models of the water-based systems?
- how should these models be integrated into decision support systems that would help engineers and managers?

Hydroinformatics provides answers to these questions. Nowadays few water-related projects can be executed without modelling supported by computer-based tools. Their successful integration and proper use are vital.

Topics of some completed MSc studies

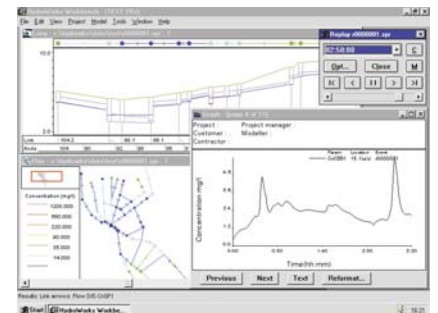
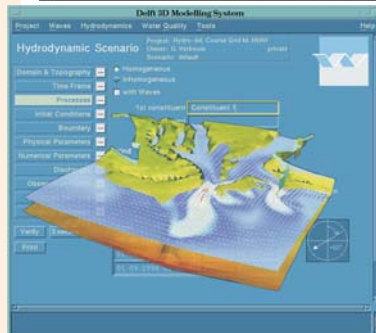
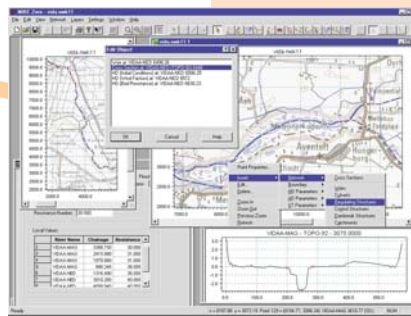
- Hydrodynamic modelling and optimal flood control for the middle reach of the Huai river basin in China
- Decision Support System for The European River Flood Occurrence and Total Risk Assessment System
- Optimal Reservoir Control for the Dong Nai River Basin in Vietnam
- Application of Internet technologies in distance learning and remote modelling
- Using GIS and Internet technologies for solving water resources management problems in Zimbabwe
- Effect of spatial grain size variations on morphology of straight alluvial channel
- Sensitivity analysis of South China Sea 2D hydrodynamic model
- Uncertainty in modelling of water distribution networks for demand management and leakage control

Programme with the difference

This is not a standard engineering programme. We often characterise it as a *programme with a difference*. The difference arises in the extensive application of modelling, information technology and decision support tools for water management, in a challenging training programme with professors and top experts from leading universities and consultancies of various countries, that opens a range of future career opportunities. Participants often mention that *"the course opened up new horizons in my professional life"*.

Fellowships

Candidates may wish to get financial assistance to cover all or part of the cost of participation in one of the IHE programmes or courses. First, it is advised to explore possibilities with their employer, national government or international funding agencies. IHE can also be of assistance in identifying possible sources. Candidates could also apply for the **Dutch Fellowships Programme**. More information can be found on www.unesco-ihe.org



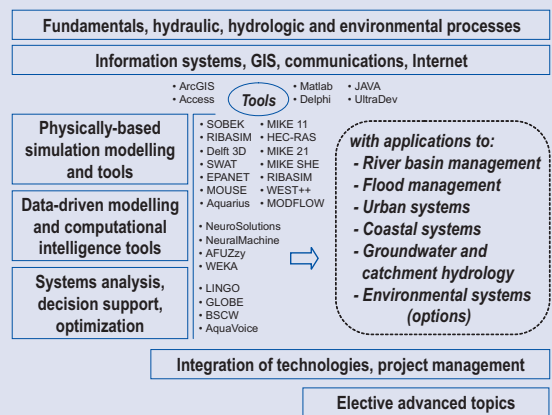
About IHE-Delft, the Netherlands

Since its establishment in 1957, IHE-Delft has been a world-leading education and research institute running Master of Engineering and Master of Science programmes. IHE-Delft has now become the UNESCO-IHE Institute for Water Education, still retaining strong roots and links with the Dutch water sector and with other European institutions, but now engaged also in facilitating a network of partner organisations around the world concerned with better transfer of knowledge concerning water. During its 45 years of history more than 12000 professional participants from more than 80 countries have been trained at IHE in water, environment and transportation. There are a number of reasons why hundreds of professionals from all over the world come to study in Delft. They relate to the Institute itself - a pleasant, multi-cultural atmosphere, professionalism - and to the wider surroundings to which participants are exposed. English is spoken widely in the Netherlands, the people are very friendly, and Delft provides a unique opportunity for anyone who wants to enjoy the social and cultural attractions of the Netherlands and other European countries during excursions and study tours.

By the end of the Hydroinformatics course the participants will

- understand the fundamentals of a range of physical processes, advanced modelling techniques and information technology for water management
- know how to select and use simulation models applied to water-based systems in a wide variety of hydraulic, hydrologic and environmental engineering situations
- know about software tools available on the market, their possible advantages and limitations, and know how to design, develop and integrate their own tools
- be able to provide advice to managers and users of advanced tools
- know how to ride a bike (after all, this is Holland!)

Structure of the Programme and the role of tools



The 18-months study programme leads to the degree of Master of Science in Water Science and Engineering, with the specialisation in Hydroinformatics. The programme consists of the 12-months taught part, and the 6-months research project resulting in a thesis. During the second part of the study participants are working in various projects at UNESCO-IHE or other institutions, in The Netherlands or abroad.