

WATR7400 - Water supply, sanitation and hygiene (WASH) (2 units)

Integration module (Specialisation stream #1: International development)

Module description

This specialist module is part of the 'International development' stream and provides participants with an understanding of both social and engineering principles and tools for designing, building and operating domestic water supply and sanitation systems in developing country contexts. Key topics include the environmental health basis of work in this sector; key principles, approaches and technologies for environmental sanitation, including decentralised excreta disposal, simplified sewerage and solid waste management; principles of water supply including water quality, quantity affordability and sustainability; groundwater abstraction through wells and springs; surface water and rainwater use; simple water treatment process technologies; water lifting and distribution; and operation and maintenance of water supply and sanitation infrastructure.

Due attention is given to non-engineering aspects of water supply and sanitation systems, including tools for demand creation and management and cost-benefit analysis of options.

Module introduction

This module provides participants with an understanding of engineering and socio-economic principles and tools for designing and operating domestic water supply and sanitation systems that are sustainable, appropriate and affordable for poor communities in developing countries.

Module delivery

- **Full-time** (on-campus) students, including international students, are required to enrol in the internal offering in Semester 2.
- **Part-time** (external) students are required to enrol in this module in Semester 2 or Semester 4. These semesters begin with an intensive face-to-face session or field trip and the remainder of the module is taught externally on-line.



Assumed background

The following modules are pre-requisites for this module: 'New perspectives on project management', 'Science of water', 'Water, sustainability and development', 'Water governance and policy'.

Learning objectives

After successfully completing this module participants are able to:

- Demonstrate understanding of the wide range of health and social issues related to water, sanitation and hygiene, how diseases are transmitted and how such transmission can be prevented through improvements in facilities and services, and changes in behaviour
- Explain the socio-economic principles underlying the development of appropriate, sustainable water supply and sanitation facilities and services in low-income contexts, and the approaches to such development which have been found successful in recent years
- Demonstrate understanding of the elements of low cost systems for sanitary collection, storage, treatment and disposal of human waste, both on-site and off-site, their function, design and modes of operation, and suitability in both urban and rural settings
- Discuss the need for and fundamental principles involved in establishing a hygiene behaviour change programme alongside other components of WASH improvements
- Show knowledge of the range of suitable technologies for the delivery of domestic water supply in low- and middle-income countries and of approaches to the selection, design, construction and management of such systems
- Explain the principles involved in designing simple water supply systems which aim for sustainability
- Show knowledge of disasters and emergencies around the world, why and how they occur and what the consequences are, and of how water, sanitation and hygiene needs can be provided for in such circumstances
- Participate successfully in an integrated group project exploring detailed aspects of integrated water management
- Participate successfully in an individual project that integrates the knowledge obtained from the core classes
- Demonstrate the use of personal reflection and social learning to improve your own ability, and your ability as part of a team, to analyse and explore integrated solutions to practical water planning and management problems exemplified in case studies presented in this course
- Show how relevant theories, integration tools and approaches presented in this course can inform the analysis of case studies and help to identify practical, integrated solutions to water planning and management problems.

Teaching staff

Lead Lecturer: [Mr Ben Fawcett](#) (Advanced Water Management Centre, The University of Queensland)

Lecturer: [Dr Regina Souter](#) (International WaterCentre)

Lecturer: [Ms Diane Cousineau](#) (International WaterCentre)

Problem-Based Learning (PBL) projects

Parallel PBL projects and field trips run through the semester, comprising roughly 50% of the assessment weight. Full-time students complete two PBL projects per semester, while part-time students complete one PBL per semester.

PBL projects for the Integration semester comprise:

- **PBL3:** Integrated catchment management – developing strategies for change (*Individual project*)
- **PBL4:** Learning lessons from integrated water management in practice (*Individual project*)

Field trips

As part of this module (Water supply, sanitation and hygiene), participants undertake a two day field experience in well digging, emergency water tank construction and concrete sanitation platform construction and water quality testing (Pinjarra Hills, Queensland).

For a complete list of field trips that participants undertake during the program, please refer back to "Field trips" on page 5 of this syllabus or visit the [IWC website](#).

