

# WATR7300 - Economics for Water Resource Management

Integration module

## Module description

This module explores a range of institutions involved in water management and both the theoretical and practical approaches to water planning and economics. Students will explore the roles and responsibilities of various water management stakeholder groups, be introduced to practical tools for effective water planning and learn the principles and frameworks governing water economics and finance. Topics include: planning and resource management instruments; water allocation; internal and external organisational governance arrangements; coordinating water and land use planning; water resources assessment; cost-benefit analysis; multi-criteria decision making; frameworks for stakeholder participation; pro-poor water governance and human rights to water; dispute resolution frameworks; multi-stakeholder privatisation contracts; trade in water services; bulk water exports.

## Module introduction

This module provides an introduction to the economics for water resource management. It will introduce students to economic theory and principles relevant to management of water quantity and water quality. The concept of economic value will be developed early in the course and become the basis for evaluating scarce water resource allocation amongst competing users. The potential contribution of payments for ecosystem services to enhance provision of ecosystem services flows within a policy framework will also be discussed. The course will then expose students to real-world contexts: supply of and demand for drinking water, public health benefits from pathogen removal in drinking water treatment, water as an input into agricultural and industrial production, allocation of water for environmental uses and decision support tools around water resource management.

## 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 4. Three days of the Semester 4 intensive workshop is held at the beginning of the semester will focus on this module. The remainder of the module is taught externally on-line.

## Assumed background

The following modules are prerequisites 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:

- Describe the concepts of ecosystem services, total economic value and sustainable water resource management from an economic perspective.
- Use sketch diagrams to explain how the behaviour of net benefit maximising consumers can be used to establish marginal willingness to pay as the basis for valuing water resources.
- Define and describe the causes of market failure (externalities, public goods, incomplete information and market power), and explain how these market failures lead to inefficient allocation of water resources by market mechanisms.
- Define and apply tools to correct market failures in managing water quantity (water pricing, water licences and water markets) and water quality (tax on inputs, tax on emissions, discharge licences, water quality trading).
- Discuss how payments for ecosystem services can be used to incentivise accumulation of environmental assets to support enhanced delivery of ecosystem services flows.
- Apply the principles developed in the first half of the course to quantify the costs of supplying urban drinking water and to estimate the benefits delivered to water consumers.
- Explain how DALY-based metrics are used to inform the setting of health-based targets for drinking water and to value the public health benefits from enhanced pathogen removal.
- Apply appropriate methods to estimate the value of water as a factor input to agricultural and industrial production.
- Apply relevant market and non-market based methods to estimate the value of water in environmental uses
- Explain how decision support tools such as cost-effectiveness analysis, cost-benefit analysis and multi-criteria analysis can be used to inform decision making regarding projects, programs and policies for water resource management.
- Participate successfully in an integrated group project exploring detailed aspects of integrated water management.



Students inspecting  
 Mt. Crosby Water  
 Treatment Plant

### Kristal Burry – Australia

The exciting thing about integrated water management is the new breed of water managers it is creating, who can interact with professionals from a number of disciplines. That's a skill which is desperately needed to manage water effectively.



### Teaching staff

**Lead Lecturer:** [Dr Jim Smart](#) (School of Environment, Griffith University)

**Lecturer:** Dr Syezlin Hasan (Australian Rivers Institute, Griffith University)

### 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.

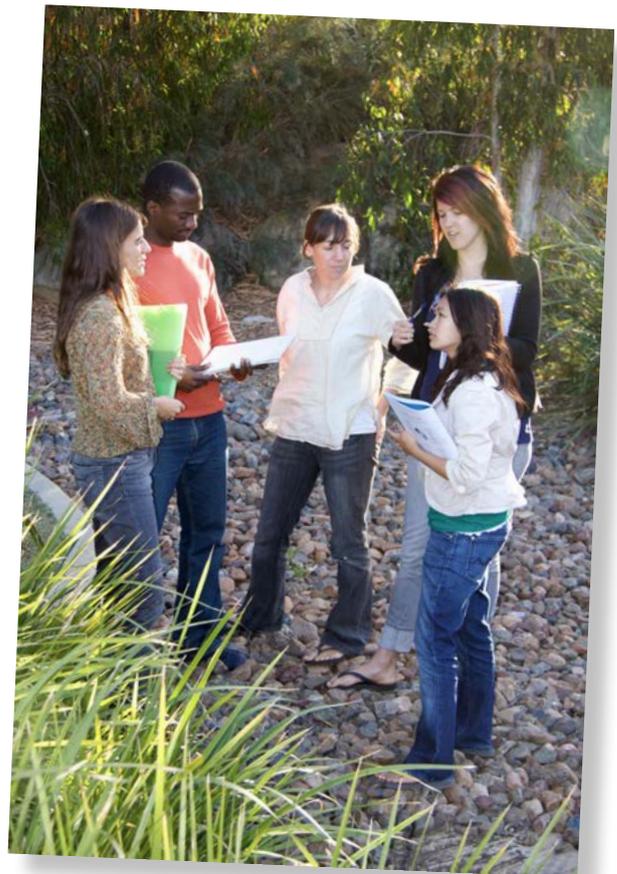
PBL projects for the Integration semester comprise:

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

### Field trips

Participants begin the Integration semester with a 10-day field trip to Cairns, Queensland. The cost of the trip is covered in module fees.

For a complete list of field trips that participants undertake during the Integration semester, please refer back to "Field trips" on page 7 of this syllabus or visit the [IWC website](#).



Photos: students working on group projects.