

WATR7600 – Designing urban futures: urban climate, water and sustainability (2 units)

Integration module (Stream no.3: Urban water)

Course description

The Designing urban futures course examines the nexus between urbanisation, climate change and water as a critical resource. The course begins by providing background knowledge on the fundamentals of weather and climate to provide the foundation for later discussions on urban climate. The impact of climate extremes on human health and morbidity are also explored during this stage. The course then moves on to examine the relationship between urban morphology, urban energy and urban hydrological balances before introducing the elements of water sensitive urban design. This part of the course is structured to follow the Cities as Water Supply

Catchments eight programs and examines practical alternatives to our existing single-use water policy, some of the benefits, some of the risks and some of the reasons societies may or may not choose to adopt the alternatives. The course material is delivered across six days of face-to-face contact with related assignments to be undertaken during private study time. Course content is given in lecture-style presentations, guided discussions and practical sessions.





IWC Graduates receive a co-badged degree from four leading Australian universities, ranked amongst the top 1% of the best universities in the world for teaching and research. (QS Global Ranking)

Course introduction

Urbanisation has profound influences on landscapes and these cause local changes in climate, most notably increased temperature (the Urban Heat Island). Additional impacts include reduced vegetation, modified urban waterways and reduced evaporation from the land surface. Moreover, urbanisation is associated with hazards such as poor air quality and heat-related illnesses. These matters are of particular concern in the context of climate change. This unit will provide an understanding of relevant physical processes and impacts along with associated technological and socio-political contexts and examine potential solutions by undertaking a sustainable cities approach including the concept of a water sensitive city as an approach to heat mitigation and climate change adaptation. Emphasis is placed on practical, theoretical, observational, analytical and modelling skills developed through lectures, practical sessions and project work.

Course delivery

- **Full-time** (on-campus) students, including international students, are required to enrol in the internal offering in Semester 2. They will attend a two-week, Perth-based teaching block in 2012, including four days of field work.
- **Part-time** (external) students are required to enrol in this module in Semester 2. The Semester 2 begins with a two-week [field trip to Albany, Western Australia](#). However, this module will be delivered full on-line after the Albany field trip.

Assumed background

The following modules are pre-requisites for this course: WATR7000, WATR7001, WATR7002 and WATR7003.

Learning objectives

After successfully completing this course students should be able to:

- understand the fundamental properties of weather and climate and be able to clearly explain the difference between the two;
- understand the basic drivers of the atmospheric circulation and the components of the global climate;
- understand the connection between climate, climate change and human health;
- appreciate urban climate knowledge and the critical role of water in the urban environment;
- apply climate knowledge to issues of urban sustainability and adaptation to climate change;

- show knowledge of water sensitive urban design features;
- apply WSUD to real-world situations;
- demonstrate practical experience in problem formulation and solution;
- work individually or as a member of a group towards implementing practical solutions for alternative urban water solutions.

Teaching staff

Course Coordinator: [Prof Paul Lant](#) (The University of Queensland)

Lecturer: [Dr Peter Isaac](#) (Monash University)

Problem-Based Learning (PBL) projects

Parallel PBL projects and field trips will run through the semester, comprising roughly 50% of the total contact time and assessment weight for the Integration semester. These enable students to develop skills that complement the content delivered in the four co-requisite courses: WATR7100, WATR7200, WATR7300, WATR7400. Please see other co-requisite course profiles to cross-reference.

The PBL stream for the Integration semester comprises an individual project and a group project conducted in multidisciplinary teams:

- **PBL3:** Development of an implementation plan for increasing water recycling in the lower Great Southern (Group project)
- **PBL4:** Critical assessment of Australian integrated water management learnings and application in a developing country context (Individual project)

Field trips

Students begin the Integration semester with a two-week field trip to [The University of Western Australia's Centre of Excellence in Natural Resource Management in Albany](#), south Western Australia. The cost of the trip is covered in course fees.

As part of this module (WATR7600 Designing urban futures), students also undertake four half-day field trips looking at aspects of urban waterways and water sensitive urban design.

For a complete list of field trips that students undertake during the program, please refer back to "Field trips" on page 4 of this syllabus or visit [IWC website](#).