CVEN90019 Sustainable Water Resources Systems

Credit Points:	12.5
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2015, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus.
Time Commitment:	Contact Hours: 36 hours comprising of lectures, syndicate exercises and tutorials Total Time Commitment: 200 hours
Prerequisites:	Admission to post graduate studies in engineering or a related discipline OR

Subject	Study Period Commencement:	Credit Points:
CVEN30010 Systems Modelling and Design	Semester 2	12.50

Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
Core Participation Requirements:	For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Student Support and Engagement Policy, academic requirements for this subject are articulated in the Subject Overview, Learning Outcomes, Assessment and Generic Skills sections of this entry. It is University policy to take all reasonable steps to minimise the impact of disability upon academic study, and reasonable adjustments will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact on meeting the requirements of this subject are encouraged to discuss this matter with a Faculty Student Adviser and Student Equity and Disability Support: http://services.unimelb.edu.au/disability
Coordinator:	Prof Hector Malano
Contact:	Professor Hector Malano **h.malano@unimelb.edu.au (mailto:h.malano@unimelb.edu.au)**
Subject Overview:	**AIMS** This subject aims to analyse the key concepts underpinning the sustainable use of water within catchments and river basins. The subject focuses on the analysis of complex water resource systems that involve multiple sources of water supply and multiple water uses including agriculture, urban, industrial, recreation and the environment. The subject builds on students' knowledge of sustainability, economics and resource management. It relates particularly to principle knowledge learnt in Systems Modelling and Design, Quantitative Environmental Modelling, Risk Analysis, Sustainable Infrastructure Systems, Reshaping Environments, and Earth Processes for Engineering or equivalent material. While the principles of resource management are learnt in the context of water, they can be applied in a range of natural resource management scenarios. Students contemplating a career in any aspect of natural resource management will find this subject of value. **INDICATIVE CONTENT** Topics include: # Water resource planning and management # Water supply

	# Wastewater and drainage # Integrated water resources management - river catchments and basins # Environmental demand # Water resource economics # Principles of water resource modelling: optimisation and simulation # Various systems of allocating water between multiple supplies and demands # Water accounting in time and space # The balance between economic and environmental uses of water.
Learning Outcomes:	**INTENDED LEARNING OUTCOMES (ILO)** Having completed this subject the student is expected to: 1 Identify and describe the physical elements of a water resource system and its interactions 2 Identify and describe the principles of allocation between different uses under conditions of scarcity 3 Identify and describe the key elements involved in modelling water resource systems 4 Describe and apply the principles and applications of water resource accounting 5 Describe and apply the concept of integrated water resources management 6 Identify the economic, environmental and social factors involved in the sustainable development and management of water resources.
Assessment:	One 3000 word group assignment, requiring approximately 40 – 45 hours of work. Assesses Intended Learning Outcomes (ILOs) 4 and 5, due about week 8 (35%) Five 600 word case study reports, requiring approximately 20 – 25 hours of work. Assesses ILOs 1 to 3. Due weekly for first 7 weeks (15%) One 4000 word individual assignment, requiring approximately 50 – 55 hours of work. Assesses ILOs 4, 5 and 6. Due End of semester (40%) In-class participation in discussion groups and group exercises. Assesses ILOs 1 to 6 First 6 weeks of semester, (10%). Hurdle Requirement: Students must pass the 4000 word individual assignment in order to pass the subject. Students must attend a minimum of 80% of case study discussions and computer laboratory sessions.
Prescribed Texts:	None
Breadth Options:	This subject is not available as a breadth subject.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	# Ability to undertake problem identification, formulation, and solution # Understanding of social, cultural, global, and environmental responsibilities and the need to employ principles of sustainable development # Ability to utilise a systems approach to complex problems and to design and operational performance # Ability to communicate effectively, with the engineering team and with the community at large # Capacity for creativity and innovation # Ability to function effectively as an individual and in multidisciplinary and multicultural teams, as a team leader or manager as well as an effective team member.
Notes:	**LEARNING AND TEACHING METHODS** This subject is conducted in a semi-intensive mode with on-campus learning activities being scheduled one day per week for six weeks. Each day will generally incorporate some lecture style presentations highlighting key information, a discussion of the readings, group work and computer modelling classes. A number of different presenters with different disciplinary backgrounds will be used. Critical review of classmates work is included to allow students to practice the development of review of professional colleagues work. **INDICATIVE KEY LEARNING RESOURCES** A selection of journal papers will be listed on the subject web site as required reading. **CAREERS / INDUSTRY LINKS**

	This subject uses a contemporary industry scenario and real data for the major assignment. A number of the presenters bring industry experience in various specialisations in water resource management.
Related Course(s):	Master of Environmental Engineering Master of Philosophy - Engineering Ph.D.- Engineering
Related Majors/Minors/ Specialisations:	Development Development Integrated Water Catchment Management Integrated Water Catchment Management Master of Engineering (Civil) Master of Engineering (Environmental) Sustainable Cities, Sustainable Regions Sustainable Cities, Sustainable Regions Sustainable Forests Sustainable Forests Tailored Specialisation Tailored Specialisation