

# OTHER AG, ENV AND RELATED (AGEN)

## AGEN 1001 Water Quality Assessment and Management (10 Credit Points)

**Subject Details** (<https://hbook.westernsydney.edu.au/subject-details/agen1001/>) **Legacy Code:** 300814

Water is essential for all life on earth. This subject will equip students with skills in biological, chemical and physical water quality assessment for a sustainable water future. The subject introduces students to healthy natural waterways and contrasting degraded waters impacted by disturbance from human activities. A broad range of pollutants, their sources and the consequences for human health and the ecology of water ways will be investigated. Management strategies will also be examined based on the sound scientific assessment of water quality. Students in this subject will cover water quality legislation, regulation, policy, guidelines and develop competencies in water monitoring, regulation, treatment and management.

**Level:** Undergraduate Level 1 subject

**Equivalent Subjects:** AGEN 2002 - Water Quality Assessment and Management

**Restrictions:** Please see the Subject Details page for any restrictions for this subject

## AGEN 1002 Water Quality Assessment and Management (WSTC) (10 Credit Points)

**Subject Details** (<https://hbook.westernsydney.edu.au/subject-details/agen1002/>) **Legacy Code:** 700298

Water is essential for all life on earth. This subject will equip students with skills in biological, chemical and physical water quality assessment for a sustainable water future. The subject introduces students to healthy natural waterways and contrasting degraded waters impacted by disturbance from human activities. A broad range of pollutants, their sources and the consequences for human health and the ecology of water ways will be investigated. Management strategies will also be examined based on the sound scientific assessment of water quality. Students in this subject will cover water quality legislation, regulation, policy, guidelines and develop competencies in water monitoring, regulation, treatment and management.

**Level:** Undergraduate Level 1 subject

**Equivalent Subjects:** AGEN 2002 Water Quality Assessment and Management

AGEN 1001 Water Quality Assessment and Management

**Restrictions:** Please see the Subject Details page for any restrictions for this subject

## AGEN 1003 Water Quality Assessment and Management (UG Cert) (10 Credit Points)

**Subject Details** (<https://hbook.westernsydney.edu.au/subject-details/agen1003/>) **Legacy Code:** 500052

Water is essential for all life on earth. This subject will equip students with skills in biological, chemical and physical water quality assessment for a sustainable water future. The subject introduces students to healthy natural waterways and contrasting degraded waters impacted by disturbance from human activities. A broad range of pollutants, their sources and the consequences for human health and the ecology of water ways will be investigated. Management strategies will also be examined based on the sound scientific assessment of water quality. Students in this subject will cover water quality legislation, regulation, policy, guidelines and develop competencies in water monitoring, regulation, treatment and management.

**Level:** Undergraduate Level 1 subject

**Equivalent Subjects:** AGEN 2002 Water Quality Assessment and Management AGEN 1002 Water Quality Assessment and Management

**Restrictions:** Please see the Subject Details page for any restrictions for this subject

## AGEN 3001 Animal Behaviour (10 Credit Points)

**Subject Details** (<https://hbook.westernsydney.edu.au/subject-details/agen3001/>) **Legacy Code:** 300878

Focusing on a variety of wildlife and domestic animal species, the subject addresses how classic ecological and evolutionary principles shape animal behaviour by weighing the experimental and observational evidence for each idea. We illustrate concepts with examples from a wide range of taxonomic groups of animals in diverse ecosystems. Students will conduct experimental field and laboratory procedures, as well as observe and work with groups of animals on the UWS Hawkesbury campus.

**Level:** Undergraduate Level 3 subject

**Equivalent Subjects:** AGEN 3002 - Animal Behaviour

**Restrictions:** Please see the Subject Details page for any restrictions for this subject

## AGEN 4001 Researching our Changing Environment (10 Credit Points)

**Subject Details** (<https://hbook.westernsydney.edu.au/subject-details/agen4001/>) **Legacy Code:** 800195

This subject focuses on learning to critically evaluate current research in topics under study at the Hawkesbury Institute for the Environment and how advanced scholarship in your field of study is conducted. The Hawkesbury Institute for the Environment spans a broad set of fields from soil microbial genomics and microbial ecology to the biogeochemistry, ecology and physiology of plants and microbes, animal ecology and evolution, to ecosystems, landscapes and Australia-wide processes. Teaching sessions are designed around a thematic cross-section of research within HIE, representing many of these areas. The subject also involves enhancing skill in evaluating appropriate research methodologies for asking questions and testing hypotheses, including an introduction to some of the large-scale research facilities within HIE that students may be involved with.

**Level:** Undergraduate Level 4 subject

**Restrictions:** Please see the Subject Details page for any restrictions for this subject

**AGEN 7001 Bushfire Behaviour (10 Credit Points)**

**Subject Details** (<https://hbook.westernsydney.edu.au/subject-details/agen7001/>) **Legacy Code:** 200457

This subject describes the factors affecting bushfire behaviour and the models which are used to predict bushfire behaviour, the principles of fire ecology, and the assessment of bushfire hazards on property and the environment. Topics include the measurement of fuel, rates of spread and flame length equations, fire danger indices and landscape issues, topographical influences on fire behaviour, the importance of fire regimes and fire thresholds on flora and fauna, habitat and fire impacts on environmental services such as soils and water catchments. The role of fire behaviour in determining impacts on structures is also described.

**Level:** Postgraduate Coursework Level 7 subject

**Restrictions:** Please see the Subject Details page for any restrictions for this subject

**AGEN 7002 Ecosystems in a Changing World (10 Credit Points)**

**Subject Details** (<https://hbook.westernsydney.edu.au/subject-details/agen7002/>) **Legacy Code:** 800170

Natural and managed ecosystems on our planet are experiencing a rapidly changing environment as a consequence of changing patterns of land and resource use, loss of biodiversity, altered atmospheric composition and anthropogenic climate change. This subject will introduce students to ecosystem concepts in the context of ecological and evolutionary responses to global change. Students will obtain practical experience in quantitative analysis of carbon, nutrient, water and energy budgets, and explore the consequences of global change for ecosystem services and biodiversity over a range of spatial and temporal scales. Teaching will be led by HIE staff with expertise in ecosystem responses to environmental change, soil microbial contributions to ecosystem function and the impacts of environmental change on plants, animals and their interactions.

**Level:** Postgraduate Coursework Level 7 subject

**Restrictions:** Please see the Subject Details page for any restrictions for this subject

**AGEN 7004 Perspectives of Sustainable Development (10 Credit Points)**

**Subject Details** (<https://hbook.westernsydney.edu.au/subject-details/agen7004/>) **Legacy Code:** 300397

This subject explores the philosophy, policies and practice of sustainable development. In exploring environmental philosophy the subject provides students with an understanding of the nature and emergence of both modern and post-modern paradigms that influence the direction and nature of current development policy. The nature of environmental policy is examined by developing an understanding of how values and attitudes shape a governing ethic about environmental management. The social, political, economic and ecological elements of sustainable development are unfolded to aid students understanding of what needs to be managed. Particular attention is given to those issues confronting developing countries as they move to become industrialised nations yet have high levels of poverty. Finally, the subject introduces the practice of environmental impact assessment as one management tool used in the management process.

**Level:** Postgraduate Coursework Level 7 subject

**Equivalent Subjects:** LGYB 8266 - Environmental Management Core Studies 1 LGYB 8275 - Environmental Management

**Restrictions:** Please see the Subject Details page for any restrictions for this subject

**AGEN 7005 Research Protocol Design and Practice (10 Credit Points)**

**Subject Details** (<https://hbook.westernsydney.edu.au/subject-details/agen7005/>) **Legacy Code:** 401080

In this subject postgraduate students develop a proposal for a research study in an area of interest, drawing upon their knowledge and experiences from other subjects in their program of study. Students learn how to apply research methods to a variety of research situations and questions; to understand how research questions are developed and answered empirically through suitable choice of research methodology, design and method; and how research findings are validated and communicated.

**Level:** Postgraduate Coursework Level 7 subject

**Co-requisite(s):** All Students must do PUBH 7016

HLTH 7008 for students in 4702

HLTH 7025 for students in 4698

CMPL 7012 for students in 4716

**Equivalent Subjects:** AGEN 7003 - Methods of Researching

**Restrictions:** Please see the Subject Details page for any restrictions for this subject

**AGEN 7007 Water Planning, Policy and Governance (10 Credit Points)**

**Subject Details** (<https://hbook.westernsydney.edu.au/subject-details/agen7007/>)

The growing pressure on water resources is leading to new and more interconnected challenges of water planning, policy and governance. There have been new developments in water management in the last two decades to cope with the challenges through the introduction of new disciplines, new techniques, new language, and new thinking. In planning, policy and governance of water resources, we need to incorporate ecology, economics, and other social sciences along with water engineering as part of solution to the challenges of water management. This unit will focus on the understanding the complexity water planning, policy and governance and understand how water sustainability can be achieved in integrated and meaningful way in different sectors, scales and landscapes. The topics to be covered include the following: water resources development; monitoring and protection of water resources; adaptive water management; water demand management; national and international water policy; water economics; institutional arrangements; water law; water rights; property regimes; hydro-diplomacy; trans-boundary water issues; national and international water allocation agreements and treaties; water conflict resolution; public participation, consensus building and confidence building; water trading; water politics; water security; water resources management, policy and governance in socially and environmentally sensitive areas and regions.

**Level:** Postgraduate Coursework Level 7 subject

**Restrictions:** Please see the Subject Details page for any restrictions for this subject

**AGEN 7008 Water Sustainability in Agriculture (10 Credit Points)**  
**Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agen7008/>)**

Population growth, urbanisation and climate change have increased the competition for water and affected water available for agriculture. The growing demand for food must be obtained using existing water resources sustainably. This subject will focus on the current status, trends and challenges of agricultural water management; understanding the practical and technical aspects of crop water requirement; the allocation, distribution, governance and use of water in agriculture; water management at the farm and regional levels; crop water relations, crop yields and water productivity; irrigation, drainage, and salinity in cultivated areas; rainwater harvesting and crop water management in rainfed areas; the use of wastewater and other low quality waters in agriculture; groundwater management in agriculture and conjunctive use of groundwater and surface water; and the internet of things and digital technologies for managing water in agriculture.

**Level:** Postgraduate Coursework Level 7 subject

**Restrictions:** Please see the Subject Details page for any restrictions for this subject

**AGEN 7009 Water Sustainability in Catchments (10 Credit Points)**  
**Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agen7009/>)**

With global climate change and other extreme weather conditions, water catchments have never been under more pressure than ever. Professionals with training in catchment management are in high demand. This subject will cover four interconnected themes: (i) Water sustainability in the natural catchments; (ii) Water sustainability in urban catchments; (iii) Water sustainability in peri-urban catchments; and (iv) Sustainability through integrated water resources management. These themes will focus on how key hydrologic processes and anthropogenic activities shape water availability. They will examine the complexity of managing water supplies and river systems in different catchments to address a multitude of challenges and issues to achieve water security and sustainable living. In particular, the subject will enable insight into various natural, environmental and socio-economic parameters affecting water sustainability and achieving catchment-level water sustainability.

**Level:** Postgraduate Coursework Level 7 subject

**Restrictions:** Please see the Subject Details page for any restrictions for this subject

**AGEN 7010 Sustainability through Transdisciplinary Approaches (10 Credit Points)**  
**Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agen7010/>)**

Water sustainability faces enormous social, cultural, ecological, technological, economic, gender and political challenges in an era of climate induced drought and floods, water scarcity, over exploitation and increasing pollution and deepening social inequities. Professionals working in the water management grappling with these challenges usually have disciplinary specific training. To lead positive change requires working in and understanding complexity and communicating with a wide range of different people in varying capacities. This unit will equip participants with critical thinking, self-reflexivity and systemic thinking competences that are required beyond technical and discipline specific knowledge. The subject will cover aspects of transdisciplinary thinking and approaches for sustainable development and resources management, the role of people, culture, society in environmental sustainability and transdisciplinary leadership and professional practice. The subject will include social hydrology, gender equity diversity and social inclusion (GEDSI) water challenges and global Indigenous and traditional water perspectives and practices.

**Level:** Postgraduate Coursework Level 7 subject

**Restrictions:** Please see the Subject Details page for any restrictions for this subject

**AGEN 9001 Higher Degree Research Thesis - Hawkesbury Institute for the Environment (80 Credit Points)**

**Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agen9001/>)** Legacy Code: 800148

**Level:** PhD and Research Masters Level 9 subject

**Restrictions:** Please see the Subject Details page for any restrictions for this subject

**AGEN 9002 Higher Degree Research Thesis - Agriculture and Environment (80 Credit Points)**

**Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agen9002/>)** Legacy Code: 800203

**Level:** PhD and Research Masters Level 9 subject

**Restrictions:** Please see the Subject Details page for any restrictions for this subject

**AGEN 9003 Higher Degree Research Thesis - Agriculture and Environment (80 Credit Points)**

**Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agen9003/>)** Legacy Code: 800180

**Level:** PhD and Research Masters Level 9 subject

**Restrictions:** Please see the Subject Details page for any restrictions for this subject