

# AGRICULTURE (AGRI)

## AGRI 1003 Animal Science (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agri1003/>) **Legacy Code:** 300801

This subject will provide students with an understanding of comparative physiological and anatomical concepts of a range of mammalian and avian species. Students will develop the skills to apply these concepts in practical situations through the use of field observations and the relationship of these to functional anatomy and physiology of production animals. In addition students will develop many of the principles and concepts employed in animal production. Concepts discussed in lectures are reinforced by practical classes held in the laboratory and in the outdoor laboratories.

**Level:** Undergraduate Level 1 subject

**Equivalent Subjects:** AGRI 1002 - Animal Science

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

## AGRI 1004 Feeding the Planet (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agri1004/>) **Legacy Code:** 300804

This subject will explore the concepts driving current food production science (population growth, urbanization, emerging affluence, resource constraints, and underlying biological limits) in terms of their universal life cycles, constraints to production and societal issues. Throughout the subject, key questions will be addressed: What are the major health benefits and potential concerns regarding the intensification of production and consumption of food? How does agricultural production affect the efficient use of resources and impact our environment? Can costs of production be reduced to meet the growing demand for food products around the globe while maintaining health and safety for consumers? What are the different types of food production systems? Myths and misconceptions surrounding the food systems will be discussed and analysed. The subject is geared towards learners who seek a greater understanding of food systems and have a desire to learn more about issues surrounding sustainability.

**Level:** Undergraduate Level 1 subject

**Equivalent Subjects:** LGYA 6095 - Primary Production

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

## AGRI 1005 Human Animal Interactions (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agri1005/>) **Legacy Code:** 300807

This subject introduces students to the varying relationships between humans and animals including domestication, the role of animals for companionship, as workers, the traditional role of animals in agriculture, wildlife and zoo animals and their increasingly recognised aesthetic and therapeutic roles. Students will work with a variety of domesticated animals, captive native mammals, and reptiles on-campus, and in a variety of animal industries off campus, including wildlife parks and zoos. The subject includes a balance of theoretical and practical work in the areas of behaviour and handling, basic husbandry, health care, and ethical management.

**Level:** Undergraduate Level 1 subject

**Incompatible Subjects:** AGRI 1006 - Introduction to Animal Science  
AGRI 1007 - Human Animal Interactions

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

## AGRI 1009 Wildlife Studies (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agri1009/>) **Legacy Code:** 300813

This subject involves the study of basic biology, ecology, conservation and management of selected wildlife. Students will learn different management systems and research methods used in the conservation and management of wildlife. The use of wildlife as a sustainable resource will also be analysed within the context of ecological sustainable development and animal ethics.

**Level:** Undergraduate Level 1 subject

**Equivalent Subjects:** AGRI 1008 - Introduction to Wildlife Studies

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

## AGRI 1010 Protected Cropping Climate Control and Technology (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agri1010/>) **Legacy Code:** 301263

This subject will teach students the intricacies of crop management in a highly controlled growing environment and the interplay between environmental response and plant behavior. In doing so, it will incorporate one nationally recognized unit of competency, "AHCPT503 - Manage a controlled growing environment". Students will also identify controlled environment technologies including those available, under-development and being researched, such as robotics, sensors and gene technologies. Students will gain an appreciation for the science and technology that drives high-tech greenhouse production and apply their skills in Western Sydney University's state of the art National Vegetable and Protected Cropping Centre (NVPCC) and its PRIVA operating system at the Hawkesbury campus.

**Level:** Undergraduate Level 1 subject

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

## AGRI 1011 Introduction to Agrifood (10 Credit Points)

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agri1011/>)

This subject introduces the concepts driving current food production science in terms of universal life cycles, constraints to production and societal issues. Throughout the subject, key questions will be addressed: What are the major health benefits and potential concerns regarding the intensification of production and consumption of food? How does agricultural production affect the efficient use of resources and impact our environment? Can costs of production be reduced to meet the growing demand for food products around the globe while maintaining health and safety for consumers? What are the different types of food production systems? The subject is geared towards learners who seek a greater understanding of food systems and have a desire to learn more about issues surrounding sustainability.

**Level:** Undergraduate Level 1 subject

**Equivalent Subjects:** AGRI 1004

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

**AGRI 2001 Agronomy (10 Credit Points)**

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agri2001/>) **Legacy Code:** 300863

This subject enables students to develop understanding of basic crop and pasture agronomy including plant identification, crop/pasture establishment, growth, development, adaptation, plant protection, and grazing management. Students manage a crop in the field and a pot trial in the glasshouse and interact with researchers and industry professionals in understanding broad principles involved in the production and management of crops, pasture and animal production issues. The practical sessions enable students to apply the management principles and become familiar with various measuring techniques.

**Level:** Undergraduate Level 2 subject

**Equivalent Subjects:** LGYA 6118 - Agronomy

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

**AGRI 2003 Animal Health and Welfare (10 Credit Points)**

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agri2003/>) **Legacy Code:** 300834

This subject will introduce students to the major issues related to animal health and welfare that form essential knowledge for those working with animals. In particular, students will gain an understanding of disease and methods for disease control as well as an introduction to disease diagnosis. In addition, students will gain knowledge about the relationships between animal management and the health and welfare expectations for domesticated and wild animals. The causes of common animal diseases will be introduced as well as the legal obligations of those owning, working or observing animals with respect to maintaining and monitoring their health and welfare.

**Level:** Undergraduate Level 2 subject

**Pre-requisite(s):** BIOS 1001

**Equivalent Subjects:** AGRI 2002 - Animal Health and Welfare

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

**AGRI 2004 Animal Reproduction (10 Credit Points)**

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agri2004/>) **Legacy Code:** 300835

Reproduction is the origin of life. The aim of this subject is to provide students with a sound understanding of reproduction of both domestic and non domestic animals so that they can design and manage a breeding program for a species of choice. Topics will include anatomy and physiology of male and female reproductive tracts; hormonal control of reproduction; fertilisation, pregnancy, parturition and lactation and advanced reproductive technologies. These topics will be explored in a range of species across different taxonomic groups.

**Level:** Undergraduate Level 2 subject

**Pre-requisite(s):** BIOS 1012 Cell Biology

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

**AGRI 2005 Sustainable Food Production (10 Credit Points)**

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agri2005/>) **Legacy Code:** 300791

Sustainable Food Production provides students with the knowledge and skills required to analyse current and future food production systems with an emphasis on water and energy efficiency. The subject material integrates agronomic principles with food supply chain analysis. This approach facilitates an analytical framework that goes beyond farm-gate productivity by including aspects of the food supply chain. Key concepts include water use efficiency, nitrogen balance, energy balance, life cycle assessment, and greenhouse gas emissions. Case studies will be drawn from a range of food production systems, emphasising productivity per unit of input.

**Level:** Undergraduate Level 2 subject

**Incompatible Subjects:** LGYA 6125 - Advances in Agonomy

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

**AGRI 2006 Agriculture, Food and Health (10 Credit Points)**

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agri2006/>) **Legacy Code:** 301389

This subject is designed to strengthen student understanding of the important interactions between food, agriculture, environment and health. Traditionally the topics of food, agriculture, environment and health have been taught mainly in isolation from each other. It is becoming increasingly apparent that this traditional approach bears little relevance to real world issues and in some cases acts as an impediment to progress. Alternatives to the current 'western industrialised' food production system will be explored. These include organic agriculture, local farmer markets, and consumer driven changes to food production systems.

**Level:** Undergraduate Level 2 subject

**Incompatible Subjects:** LGYA 6185 - Ecology of Production

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

**AGRI 2007 Introduction to Agrifood (10 Credit Points)**

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agri2007/>) **Legacy Code:** 301443

This subject introduces the concepts driving current food production science in terms of universal life cycles, constraints to production and societal issues. Throughout the subject, key questions will be addressed: What are the major health benefits and potential concerns regarding the intensification of production and consumption of food? How does agricultural production affect the efficient use of resources and impact our environment? Can costs of production be reduced to meet the growing demand for food products around the globe while maintaining health and safety for consumers? What are the different types of food production systems? The subject is geared towards learners who seek a greater understanding of food systems and have a desire to learn more about issues surrounding sustainability.

**Level:** Undergraduate Level 2 subject

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

**AGRI 3001 Analysis of Agricultural Supply and Demand (10 Credit Points)**

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agri3001/>) **Legacy Code:** 301098

Students will develop understanding of the integrated nature of the agri-food value chain (supply and demand) from economic, environmental and social perspectives. Integrative processes and tools from established value chains will be evaluated in the context of changing consumer sentiment. Through analysis of economic and environmental gains (e.g. water and energy savings), students will identify emerging opportunities and challenges for improved and/or alternative food distribution systems. Analytical and reporting tools will be used to develop competence in data management, with emphasis on increasing communication from consumer to producer.

**Level:** Undergraduate Level 3 subject

**Equivalent Subjects:** LGYA 6131 - Analysis of Agricultural Supply Chains

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

**AGRI 3002 Animal Nutrition and Feeding (10 Credit Points)**

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agri3002/>) **Legacy Code:** 300853

Animal nutrition and feeding is fundamental to many aspects of animal production and wildlife systems. This subject aims to provide students with knowledge of nutrient requirements for different types of animals and the nutrient composition of common feeds. Students will evaluate and formulate rations to meet a range of animal requirements at different stages of growth, reproduction, lactation and production.

**Level:** Undergraduate Level 3 subject

**Equivalent Subjects:** AGRI 3003 - Animal Nutrition and Feeding

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

**AGRI 3005 Animal Production (10 Credit Points)**

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agri3005/>) **Legacy Code:** 300854

Animal production is about producing animals for food, companionship and conservation. This subject aims to develop an understanding of the major animal production systems used for food and fibre and other resources in Australia (intensive and wildlife), and to apply this knowledge to improving problematic issues and understanding topical issues. Topics will focus on the application of animal production principles to these production systems.

**Level:** Undergraduate Level 3 subject

**Equivalent Subjects:** AGRI 3004 - Animal Production

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

**AGRI 3007 Water in the Landscape (10 Credit Points)**

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agri3007/>) **Legacy Code:** 300870

Many land and water use activities in both urban and rural landscape result in hydrologic changes that have environmental, economic and social consequences. These activities require appropriate management strategies for sustainable water use in catchment. In this unit, the hydrologic cycle will be explored at varying spatial scales in urban and rural contexts. Hydrologic, environmental, economic and social perspectives will be used in the examination of the demand and the use of water.

**Level:** Undergraduate Level 3 subject

**Equivalent Subjects:** LGYA 6246 - Water in the Landscape

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

**AGRI 3008 Animal Health, Ethics and Welfare (10 Credit Points)**

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agri3008/>) **Legacy Code:** 301255

This subject will ensure students will be able to evaluate the major issues related to animal health, welfare and ethical frameworks that govern working with animals. In particular, students will gain knowledge of the diseases impacting animals and methods for disease diagnosis and control. In addition, students will apply this knowledge to the relationships between animal management and the health and welfare expectations for domesticated and wild animals. The legal obligations of the impact of legislative regulation for those owning, working or observing animals with respect to approval processes, maintaining and monitoring animal health and welfare is also addressed. Students may need to travel to another campus to complete this subject.

**Level:** Undergraduate Level 3 subject

**Pre-requisite(s):** BIOS 1001 AND

AGRI 1003

**Incompatible Subjects:** AGRI 2002 Animal Health and Welfare

AGRI 2003 Animal Health and Welfare

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

**AGRI 3009 Agricultural Technology (10 Credit Points)**

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agri3009/>) **Legacy Code:** 301449

Agricultural Biotechnology is rapidly developing and this subject will assure you the knowledge and skills that contribute to the future of sustainable food production. The subject material integrates agronomic principles with current and emerging biotechnology, highlighting issues and solutions based around case studies. This approach facilitates an analytical framework that goes beyond traditional production systems including eco-farming, life-cycle and regenerative agriculture, along with development of innovative and integrated production and waste systems. Key concepts include sustainable resource use, nitrogen balance, energy efficiency, and greenhouse gas emissions and market analysis.

**Level:** Undergraduate Level 3 subject

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

**AGRI 3010 Animal Health and Welfare (10 Credit Points)**

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agri3010/>) **Legacy Code:** 301456

Diseases of domesticated and native Australian animals, including endocrine, metabolic and pathogenic are significant factors influencing animal health, welfare and production. Understanding the interactions between the host animal genes and immune system along with the environmental influences, you will develop knowledge and skills in sustainably managing animal health and welfare. This subject will develop your knowledge of the diseases impacting animals and methods for disease diagnosis and control. In particular, you will apply this knowledge to the relationships between animal management and the health and welfare expectations for domesticated and wild animals.

**Level:** Undergraduate Level 3 subject

**Equivalent Subjects:** AGRI 3008 Animal Health Ethics and Welfare

**Incompatible Subjects:** AGRI 2002 Animal Health and Welfare

AGRI 2003 Animal Health and Welfare

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

**AGRI 7001 Agricultural Biosecurity (10 Credit Points)**

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agri7001/>) **Legacy Code:** 301368

Biosecurity is a set of measures to prevent, respond to and recover crops and livestock from pests and diseases that threaten the economy and environment. Comprehensive biosecurity systems help ensure food security and food safety, which is crucial for community health, competitiveness for agricultural export and conservation of natural environments. This subject studies the epidemiologic triangle consisting of the host, disease and the environment in which the disease develops, and the series of measures and practices to detect and prevent entry and spread of pests, diseases and weeds. The potential for future biosecurity mega shocks to the agricultural industry, preparedness for rapid emergency responses to an exotic incursion, and management of invasion of pests and diseases will be discussed.

**Level:** Postgraduate Coursework Level 7 subject

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

**AGRI 7002 Agricultural Biotechnology (10 Credit Points)**

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agri7002/>) **Legacy Code:** 301369

Biotechnology is a powerful enabling technology that is revolutionising agriculture by delivering improved productivity and nutrition, better management of pests and diseases, improved ability to cope with environmental challenges, and development and production of medicines and functional products. The discovery and applications of gene editing by CRISPR-Cas technology as well as modification of organisms using recombinant DNA, RNAi and other molecular technologies are seen as key to providing solutions to global food crisis, climate change associated disasters and health and disease-related issues. This subject focuses on modern and cutting-edge techniques used in cell culture and tissue engineering, genome editing, transformation and transgenesis, rapid breeding and selection and synthetic biology to address contemporary issues in sustainable agriculture.

**Level:** Postgraduate Coursework Level 7 subject

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

**AGRI 7003 Agricultural Technologies (10 Credit Points)**

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agri7003/>) **Legacy Code:** 301370

This subject will provide students with knowledge and practical experience of new technologies associated with broad-acre and intensive cropping and pastures, and their role in mixed farming systems. A major focus of this subject is how new technologies such as drones, machine learning, remote sensing and imaging science technologies are contributing to more productive and sustainable land management systems. The advanced agronomy component of the subject will explore keys to successful crop and pasture management - recognising variability in performance within the paddock and farm, diagnosing the underlying causes of spatial and temporal variability, and using precision agriculture tools to produce better informed enterprise management decisions, plant yield, sustainability and quality for end-users.

**Level:** Postgraduate Coursework Level 7 subject

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

**AGRI 7004 Livestock Production Systems (10 Credit Points)**

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agri7004/>) **Legacy Code:** 301373

This subject covers the principles of animal production required to develop sustainable and efficient production systems to meet the challenges of domestic and global needs. It will cover the scientific principles (biochemical, anatomical and physiological) that underpin intensive and extensive animal production. These principles will be related to key production parameters and indicators including growth, reproduction, lactation and milk production, fibre production and breeding. Students will apply scientific principles to the planning of production in farming simulation models. Through these simulation programs students will explore production case studies and develop advisory plans. Focus areas include animal health and management, whole farm production systems and the challenges to animal production from changing climate, food safety and quality, consumer requirements and animal welfare.

**Level:** Postgraduate Coursework Level 7 subject

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

**AGRI 9001 Higher Degree Research Thesis - Agriculture (10,20 Credit Points)**

Subject Details (<https://hbook.westernsydney.edu.au/subject-details/agri9001/>) **Legacy Code:** 800065

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

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