



FACULTY OF  
VETERINARY &  
AGRICULTURAL  
SCIENCES



Primary Industries Climate Challenges Centre

# Graduate Certificate in Climate Change for Primary Industries



# Overview

This course is designed specifically to fast track the skills and capabilities of professionals who work in advising the agricultural sector on climate change mitigation, sequestration and adaptation.

In addition to developing individual capability, your work and projects will provide invaluable insights into the impacts of climate change on the future of primary industries in Australia.

## Who should attend

The course is relevant to researchers, extension officers, farm consultants, land managers and natural research management facilitators working with farmers and land managers, and in food production, agribusiness and natural resource management. You will be provided with an applied understanding of the many factors underpinning climate change risk for agricultural production and land management and an awareness of methods for carbon farming, sustainable food and fibre production and their markets, in the face of a changing climate.

## Course objectives

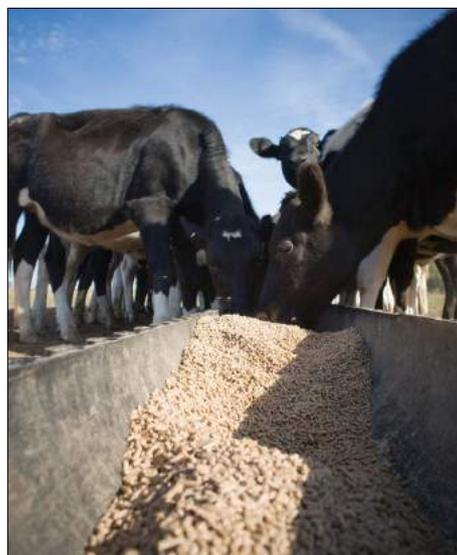
The objectives of this course are to:

Explore the interdisciplinary nature of primary industries and climate change impacts, mitigation, sequestration and adaptation at an advanced level.

Provide you with a sound foundation in the scientific and economic principles and analytical skills underpinning responses to climate change.

Develop your competence in the analysis of complex systems in devising strategies for responding to climate change impacts on agricultural production.

Develop your critical understanding of environmental, economic, social and ethical factors related to climate change and primary industries in Australia and globally.



## Course structure

To satisfy the requirements of the Graduate Certificate in Climate Change for Primary Industries, you must successfully complete the following four subjects (12.5 credit points each), for a total of 50 points:

1. Climate Variability and Climate Change
2. Greenhouse Gases from Agriculture
3. Climate Change and Agricultural Adaptation
4. Climate and Economic Strategy.

Each subject comprises five days intensive coursework delivery, pre-course study and assessment components.

## Further study

You can complete an individual subject as Continuing Education without receiving the Graduate Certificate award. Students who successfully complete Subject 1: Climate Variability and Climate Change *plus* one other of the three remaining subjects will attain a Professional Certificate in Climate Change for Primary Industries. The four subjects may be credited towards a number of Masters by coursework qualifications – applications for credit are assessed on a case-by-case basis.

## Entry requirements

A Selection Committee will evaluate your ability to successfully pursue the course using the following criteria:

- a postgraduate degree in a relevant discipline or equivalent; or
- an undergraduate degree in any discipline and five years of documented relevant work and/or professional experience, or equivalent; or
- an undergraduate degree in a relevant discipline and two years of documented relevant work and/or professional experience, or equivalent.

The Selection Committee may call for referee reports or employer references for more details.

## Assessment

Assessment has been designed to have practical relevance and application to agricultural extension and communication staff.

## Study support

You will be provided with log-in access to distance support materials, including course readings and notes, as well as access to subject leaders and other participants for the duration of each subject, including the assessment period.



## Fees

2017 fees \$3,100 per subject, \$12,400 per course.

FEE-HELP is available – please visit [www.studyassist.gov.au](http://www.studyassist.gov.au) for more information.

## Subjects

### Climate Variability and Climate Change (ENST90011)

Academic leaders: Professor Ian Simmonds and Professor David Karoly

This subject introduces the fundamental processes and dynamics important for climate variability and climate change in the Australian region, using both observations and climate models.

The subject will discuss the development of regional climate change scenarios using climate model outputs and their application for a range of climate change impact studies.

### Greenhouse Gases from Agriculture (ENST90013)

Academic leaders: Professor Richard Eckard and Professor Stefan Arndt

This subject introduces you to the policy environment and processes by which greenhouse gases are evolved, from carbon stored in agricultural systems, and the basis of that understanding, including options for mitigation.

The principal focus will be on soil carbon sequestration, enteric methane from livestock, and nitrous oxide emissions from soils, fertilisers and animal waste. Accounting frameworks will be introduced for mitigation options and potential for carbon trading.

### Climate Change and Agricultural Adaptation (ENST90014)

Academic leader: Professor Snow Barlow

This subject will examine the potential impacts of current and projected climate changes on food production in the world's major agricultural areas.

The subject will use Victorian and Australian agriculture, with its broad range of industries and climatic zones, as an exemplar of the potential adaptation strategies that may be implemented, to ensure the sustainability of food production.

### Climate and Economic Strategy (ENST90012)

Academic leader: Associate Professor Bill Malcolm

This subject introduces economic ways of thinking about appropriate responses of businesses to changes in their operating environment as a result of concerns about climate change.

The expected costs and benefits of changing climatic conditions for agricultural production in Australia and internationally will be assessed. Policies to curb greenhouse gas emissions, such as carbon taxes or an emissions trading scheme, will be explained and analysed.

## Academic leaders



### Professor Ian Simmonds

Ian is Professor of Atmospheric and Oceanic Sciences in the School of Earth Sciences at the University of Melbourne. He teaches extensively in the undergraduate program, has a very active research program and supervises students in their Honours and PhD research. Among the topics of his research are the variability of rainfall and soil hydrology over Australia and other continents, Antarctic research, and the development and use of climate models.



### Professor Richard Eckard

Richard is Professor and Director of the Primary Industries Climate Challenges Centre ([www.piccc.org.au](http://www.piccc.org.au)), a joint research initiative between the University of Melbourne and Agriculture Victoria. He is a science advisor to the Australian, New Zealand and UK governments and the UN Food and Agriculture Organisation on climate change adaptation, mitigation and policy development in agriculture. His research focuses on strategies for reducing enteric methane and nitrous oxide from intensive grazing systems, and whole farm systems modelling of climate change adaptation and mitigation strategies in livestock production.



### Professor Snow Barlow

Snow is Foundation Professor of Horticulture and Viticulture at the University of Melbourne's Faculty of Veterinary and Agricultural Sciences. He is an agricultural scientist and plant physiologist, internationally recognised for his research on the adaptation of agricultural industries to climate change. His research group undertook the first Australian studies on the impacts of elevated carbon dioxide on woody species, later including crop and pasture species in these studies. His current research interests include the adaptation of perennial crops, particularly grapevines and tree crops, to climate change.



### Associate Professor Bill Malcolm

Bill lectures within the University of Melbourne's Faculty of Veterinary and Agricultural Sciences. Bill teaches agriculture and resource economics at undergraduate and graduate level, and has researched and written extensively about agricultural economics and policy.

Bill also has a part-time appointment within the Future Farming Research Division of Agriculture Victoria.



### Professor David Karoly

David is Professor of Climate Science at the University of Melbourne's School of Earth Sciences. He is an internationally recognised expert in climate change and climate variability, including greenhouse climate change, stratospheric ozone depletion and interannual climate variations due to El Niño-Southern Oscillation. He was heavily involved in the preparation of the Fourth Assessment Report of the Intergovernmental Panel on Climate Change released in 2007.



### Professor Stefan Arndt

Stefan is a Professor in the University of Melbourne's School of Ecosystem and Forest Sciences. He has extensive research experience in physiological and ecosystem ecology, with research relating to processes operating at leaf, whole plant and ecosystem scales. His work focuses on the process-based investigation of carbon balance, nutrient cycling and fluxes of greenhouse gases in natural and agricultural ecosystems and the adaptation of plants to environmental stresses. His contribution to this field has been to use physiological and ecological measures to increase our understanding of ecosystem function, with improved process understanding and model development as a goal.

## Key dates

Subject	Pre-reading and pre-course assessment work	Delivery	Final assessment submission
Climate Variability and Climate Change	16 January – 20 February 2017	20 – 24 February 2017	24 February – 7 April 2017
Greenhouse Gases from Agriculture	10 April – 15 May 2017	15 – 19 May 2017	19 May – 19 June 2017
Climate Change and Agricultural Adaptation	30 May – 3 July 2017	3 – 7 July 2017	7 July – 14 August 2017
Climate and Economic Strategy	No pre-readings	18 – 22 September 2017	22 September – 30 October 2017

## University of Melbourne, Burnley campus



### Course delivery venue

The course will be delivered at the University of Melbourne's Burnley Campus, 500 Yarra Boulevard, Richmond.

### Travel information

Melways Reference - page 45, A12.

Tram 75, Stop 29 - walk down Wallen Road to Swan Street entrance.

Tram 70, Stop 18 - opposite Swan Street entrance.

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\* Times Higher Education World University Rankings 2015-2016.

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## Faculty of Veterinary and Agricultural Sciences

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## More information

For course enquiries and applications please contact:

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