Graduate Diploma In Plant Biosecurity (NR55)

Year offered: 2011
Admissions: Yes
Course duration (part-time): 4 semesters (2 years)
Domestic Fees (indicative): 2011: Full fee tuition $14,250 (indicative) per semester
International Fees (indicative): 2011: $15,000 (indicative) per semester
Domestic Entry: February
International Entry: February - (Note: THIS IS AN EXTERNAL COURSE AND IS NOT AVAILABLE TO ONSHORE INTERNATIONAL STUDENTS ON STUDENT VISAS)
Total credit points: 96
Standard credit points per part-time semester: 24
Course coordinator: Associate Professor Anthony Clarke
Campus: External

Course Design
Biosecurity is a rapidly growing field of national and international importance. Recent high profile pest and disease incursions into Australia, such as equine influenza, citrus canker and red imported fire ant, highlight the threat of exotic organisms to our animal industries, plant industries and native environment respectively. While human and animal health issues often have a higher public profile than plant health issues, this does not mean that plant health issues are any less important. For example, should the exotic wheat disease karnal bunt ever enter and establish in Australia, it is calculated that it would cost the national economy $1 billion per year and fundamentally change our agricultural export sector.

Entry Requirements
Applicants must possess a Bachelors Degree, however with significant professional experience in plant biosecurity or a related discipline (eg entomology, plant pathology, quarantine) may enter at the Graduate Certificate level (NR45) and progress from Graduate Certificate to Graduate Diploma (NR55) then to the Masters program. If entering the Master of Plant Biosecurity following initial entry into the Graduate Certificate based on prior professional experience, students will not receive advanced credit for IFN100.

From 2011 this degree will be delivered on a full-time or part-time basis, externally in a full-flexible mode by a consortium of Australian universities. Due to student visa requirements, International students cannot do this course from within Australia.

Career Outcomes
Graduates will be able to pursue careers in biosecurity, quarantine and pest management, acting in technical, research and administrative roles, with organisations such as the State Departments of Agriculture, State Biosecurity Agencies, AQIS, Biosecurity Australia, Plant Health Australia and private industry, or their international counterparts depending on your nationality.

Professional Recognition
Graduates will be eligible to apply for membership for non-accredited societies, such as the Australian Entomological Society, the Australian Plant Pathology Society, the Australian Ecological Society, the Australian Institute of Agricultural Science, the Australian Society of Horticultural Sciences and the Australian Society for Risk Analysis.

Early Exit Options
NR45: Graduate Certificate in Plant Biosecurity - 48CP

Further Information
For further information about this course, please contact:

Course Coordinator
Associate Professor Anthony Clarke
Phone: +61 7 3138 5023
Email: a.clarke@qut.edu.au

Course structure - Full-time

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<thead>
<tr>
<th>Year 1, Semester 1</th>
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<tbody>
<tr>
<td>NRN120 Plant Biosecurity: Detection and Diagnostics</td>
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<td>NRN150 Plant Biosecurity in Practice</td>
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<td>Select TWO units from the following:</td>
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<td>NRN106 Biosecurity Plant Pests - Invertebrates</td>
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<td>NRN107 Biosecurity Plant Pests - Pathogens</td>
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<td>NRN108 Biosecurity Plant Pests - Weeds</td>
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<th>Year 1, Semester 2</th>
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<tr>
<td>NRN210 Invasion Biology: Foundations of Biosecurity</td>
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<td>NRN215 Risk Assessment</td>
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<td>NRN218 Community Engagement and Participation</td>
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<td>NRN220 Policy Framework Obligations</td>
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Course structure - Part-time

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<th>Year 1, Semester 1</th>
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<td>Select TWO units from the following:</td>
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UNIT SYNOPSISES

NRN106 BIOSECURITY PLANT PESTS - INVERTEBRATES
It is essential for graduates in plant biosecurity to be familiar with Biosecurity plant pests. This unit investigates invertebrates including their identification, how they function and their host relationships. Because most invertebrate plant pests are insects this course will largely focus on this group, however, other invertebrate plant pests such as the nematodes, snails and mites will also be covered. Invertebrates have quite complex life-cycles, some of which can occur in the absence of the host, so understanding the biology of different groups is essential for appropriate boarder inspection and post-boarder surveillance.  
**Contact hours:** Self paced, flexible online delivery  
**Campus:** Internet

NRN107 BIOSECURITY PLANT PESTS - PATHOGENS
It is essential for graduates in plant biosecurity to be familiar with Biosecurity plant pests. This unit investigates plant pathogens including their identification, how they function and their host relationships. Plant pathogens are found across a range of major biological groupings making their study challenging, but also essential if the pathogen is to properly recognised and the appropriate biosecurity measure applied. Because of their diversity, plant pathogens have a range of different life-cycles, some of which can occur in the absence of the host, so understanding the biology of different groups is essential for appropriate boarder inspection and post-boarder surveillance.  
**Contact hours:** Self paced, flexible online delivery  
**Campus:** Internet

NRN108 BIOSECURITY PLANT PESTS - WEEDS
It is essential for graduates in plant biosecurity to be familiar with Biosecurity plant pests. This unit investigates weeds, including their identification, their biology and ecology and their invasion biology. Weeds are found across all major plant groups making study of their ecology and biology challenging, but also essential if the weed is to be properly recognised and the appropriate biosecurity measure applied. Understanding the biology and ecology of different weed groups is essential for appropriate border inspection and post-border surveillance. In event of an incursion management is also required, so this unit will also introduce the basic concepts of eradication and control.  
**Contact hours:** Self paced, flexible online delivery  
**Campus:** Internet

NRN120 PLANT BIOSECURITY: DETECTION AND DIAGNOSTICS
Pest detection and diagnostics are cornerstones of biosecurity practice. Without the ability to detect, and then accurately identify biosecurity threats, it would be impossible to effectively erect boundaries against those pests, determine if the pests have crossed boundaries, or ensure our trading partners that we are free of the pests. Detection and diagnostics is not just about identifying a dead insect on a pin, but covers much broader issues such as extensive and intensive field surveys, use of molecular diagnostics tools and management and reporting of large data sets. This unit extends upon the biological knowledge gained in the “Biosecurity Pest” and starts looking at biosecurity practice.  
**Contact hours:** Self paced, flexible online delivery  
**Campus:** Internet

NRN150 PLANT BIOSECURITY IN PRACTICE
Plant biosecurity is a relatively new field which covers a wide range of disciplines. While most people understand the value and role of quarantine, biosecurity in the broad sense remains a mystery to most people. Even if you are already working in some aspect of biosecurity, you may know only your part of the biosecurity continuum and little about other biosecurity areas. This unit will present an overview of biosecurity as a whole, introducing international and national legislative aspects, what is meant by the biosecurity continuum, and the different disciplines which make up biosecurity practice.  
**Contact hours:** Self paced, flexible online delivery  
**Campus:** Internet

NRN210 INVASION BIOLOGY: FOUNDATIONS OF BIOSECURITY
The whole process of plant biosecurity is about reducing the impact of invasive organisms, that is organisms which have
entered, established, and become pestiferous in a region or country outside their natural distribution. Invasion biology is the branch of ecology which studies invasive organisms, focusing particularly on the invasion process and aspects of behavioural ecology, population ecology and genetics which impact upon, or result from, successful invasions. Knowledge of invasion biology is critical for the biosecurity professional as it places biosecurity within a biological framework and can guide activities such as surveillance, monitoring, eradication and response. 

**Contact hours:** Self paced, flexible online delivery  
**Campus:** Internet

**NRN215 RISK ASSESSMENT**

The identification, analysis and management of risk are critical skills that ensure an effective Plant Biosecurity system. It is therefore essential for graduates in plant biosecurity to be familiar with current and developing approaches to risk analysis and management. Although in the past risk analyses have most often been performed in a qualitative manner, there are increasing pressures towards more quantitative methodologies due to international regulatory requirements. This unit will investigate the purpose of risk management, the plant biosecurity context in which risk management is undertaken, and consider different models and methodologies for risk analysis. 

**Prerequisite(s):** NRN150  
**Contact hours:** Self paced, flexible online delivery  
**Campus:** Internet

**NRN218 COMMUNITY ENGAGEMENT AND PARTICIPATION**

All aspects of biosecurity rely on community engagement, where the community is defined as the range of stakeholders upon whom biosecurity activities impact. At the international level the community includes trading partners with whom we interact for both import and export. Domestically, the community includes Commonwealth and State agencies involved in biosecurity, the rural community and the general public who may be unknowing carriers of biosecurity threats, or conversely the “eyes” of national biosecurity surveillance programme. Biosecurity in the absence of community engagement cannot work and this is widely recognised within the profession.  

**Prerequisite(s):** NRN150  
**Contact hours:** Self paced, flexible online delivery  
**Campus:** Internet

**NRN220 POLICY FRAMEWORK OBLIGATIONS**

The identification, analysis and management of risk are critical skills that ensure an effective Plant Biosecurity system. It is therefore essential for graduates in plant biosecurity to be familiar with current and developing approaches to risk analysis and management. Although in the past risk analyses have most often been performed in a qualitative manner, there are increasing pressures towards more quantitative methodologies due to international regulatory requirements. This unit will investigate the purpose of risk management, the plant biosecurity context in which risk management is undertaken, and consider different models and methodologies for risk analysis.  

**Prerequisite(s):** NRN150  
**Contact hours:** Self paced, flexible online delivery  
**Campus:** Internet