

HORT 7001 ADVANCED GREENHOUSE TECHNOLOGY

Credit Points 10

Legacy Code 301358

Coordinator Michelle Mak ([https://directory.westernsydney.edu.au/search/name/Michelle Mak/](https://directory.westernsydney.edu.au/search/name/Michelle%20Mak/))

Description This subject explores a range of advanced greenhouse technologies in Australia and overseas-from simple low-cost options, through to cutting-edge technology in energy and water-efficient production. Students will observe current status and future trends in the industry to examine how advanced technologies can improve sustainability measures along with the reliability of horticultural output. This subject focuses on engineering aspects of greenhouse horticulture systems as well as crop growth and development. The basics of crop growth and development and the physical principles of greenhouse systems at different levels will be taught. The main in depth topics of the subject are: the selection of suitable greenhouse technology, physics of greenhouse climate, greenhouse systems (passive greenhouse, climate controlled, closed or semi-closed greenhouse), cropping systems, cover materials and smart glass technologies, energy saving technologies, water and nutrient recycling, and robotics for de-leafing and picking.

School Science

Discipline Horticulture

Student Contribution Band HECS Band 1 10cp

Level Postgraduate Coursework Level 7 subject

Assumed Knowledge

Students entering this subject may have basic knowledge of crop physiology and production, and basic understanding of the physical principles pertaining to glass house design. Student may also have knowledge and experience in one of the following subject areas: horticultural production systems; environmental sustainability analytics; technological design and development; marketing principles and business management.

Learning Outcomes

On successful completion of this subject, students should be able to:

1. Explain objectives of advanced greenhouse technologies and their effective application and
2. Articulate key challenges and opportunities for the selection of suitable greenhouse technology
3. Appraise principles of advanced protected cropping technologies in the context of national and
4. Communicate the advanced greenhouse technologies in contributing to the wider
5. Evaluate advances in greenhouse technologies in Australia in comparison to international greenhouse technological advancements.

Subject Content

- 1.Current status of advanced greenhouse technologies in Australia and overseas with low-tech,
- 2.The physical principles of greenhouse systems at different levels: passive greenhouse, climate

- 3.The advanced management monitoring of crop growth and development and the selection of
- 4.Advanced cropping systems for current vegetables and herbs and future crops under protected
- 5.Innovations in covering materials and glass technologies for improving energy use efficient and
- 6.Advances in fertigation, water and nutrient recycling technologies for optimal crop production
- 7.Progress in robotics for labour-intensive de-leafing, pollination, and picking technologies.
- 8.Future global innovations of advanced greenhouse technologies and their use for Australian

Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Type	Length	Percent	Threshold	Individual/Group Task
Quiz	3 x online quizzes, 60 min each include multiple choice and short answer questions	30	N	Individual
Report	Practical report (15%, 1,000 words); Presentation (15%, 15 min)	30	N	Group
Essay	2,000 words	40	N	Individual
Participation	3 day workshop	S/U	Y	Individual

Teaching Periods

Spring (2022)

Hawkesbury

Day

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View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=HORT7001_22-SPR_HW_D#subjects)

Spring (2023)

Hawkesbury

On-site

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View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=HORT7001_23-SPR_HW_1#subjects)