

AGRI 7002 AGRICULTURAL BIOTECHNOLOGY

Credit Points 10

Legacy Code 301369

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

Description 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.

School Science

Discipline Agricultural Science

Student Contribution Band HECS Band 1 10cp

Level Postgraduate Coursework Level 7 subject

Learning Outcomes

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

1. Critically appraise the essential principles, technologies, and applications of biotechnology as applied to sustainable agriculture.
2. Distinguish the advantages and disadvantages of using biotechnology in agriculture.
3. Interpret the national and international regulatory framework of agricultural biotechnology.
4. Justify inferences and solutions to the data collected in response experiments in a professional context.
5. Communicate scientific advances in biotechnology to diverse audiences.

Subject Content

1. History of agricultural biotechnology.
2. New technologies in organism modification (CRISPR-Cas, RNAi, Epigenetic marks).
3. Applications of biotechnology for improved yield and nutritional qualities of food crop.
4. Resistance to pest and pathogens.
5. Reduced dependence on agrochemicals, production of vaccines.
6. Faster breeding and selection of crops improved traits.
7. Advances in stem cell research such as development of organoid systems, plant derived scaffolds for tissue engineering.
8. Biotechnology policies and regulation.

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
Case Study	2,000 words	25	N	Individual
Quiz	1 hour	10	N	Individual
Simulation	10 minutes	15	N	Individual
Quiz	1 hour	10	N	Individual
Quiz	1 hour	10	N	Individual
Portfolio	3,000 words	30	N	Individual

Teaching Periods

Autumn (2022)

Hawkesbury

Day

Subject Contact Robert Sharwood ([https://directory.westernsydney.edu.au/search/name/Robert Sharwood/](https://directory.westernsydney.edu.au/search/name/Robert%20Sharwood/))

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=AGRI7002_22-AUT_HW_D#subjects)

Autumn (2023)

Hawkesbury

On-site

Subject Contact Robert Sharwood ([https://directory.westernsydney.edu.au/search/name/Robert Sharwood/](https://directory.westernsydney.edu.au/search/name/Robert%20Sharwood/))

View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=AGRI7002_23-AUT_HW_1#subjects)