

BTNY201: Plant Functional Biology & Biotechnology

Teaching Staff:- Associate Professors David J. Burritt & Paul L. Guy

LECTURES

In this course we investigate the processes & factors that control plant growth and development, and how plants can be manipulated to sustainably satisfy the increasing global demand for crops, food & fuels.

Section I (14 Lectures)

The Development of Higher Plants: theory and biotechnological applications

Manipulating plant cells, control of embryo & seedling development, artificial seeds, controlling vegetative growth & development, flowering & fruit set, postharvest biology, plant breeding & genetic modification.

Section II (6 Lectures)

Plant Metabolism: designing better plants

Primary metabolism & management of reserves, secondary metabolism: plants, potions & people, plant cells as green chemical factories & genetic manipulation of plant metabolism.

Section III (4 Lectures)

Plant Responses to Stress: coping with climate change

How plants cope with stress, super-plants: manipulation of stress tolerance in plants, plants & people: a greener future or no future.

LABORATORIES

Experiment I (2 weeks)

An introduction to plant tissue culture

In this laboratory you will learn how to establish & grow plants as tissue cultures.

Experiment II (2 weeks)

How can the life of cut flowers be increased?

In this laboratory you will develop a method to prolong the life of cut flowers.

Mini-project (8 weeks)

Nodal propagation of potato and the induction of tuberization in vitro OR *Plant-derived secondary metabolites and proteins.*

The Mini-projects involve formal laboratories, tutorials & self-directed learning.

ASSESSMENT

Experiment I (5%), Experiment II (10%) and the Mini-project (25%), totaling of 40% of the final mark.

Mid-semester Exam: a one-hour closed book exam, 20% of the final mark.

Final Exam: a two-hour closed book exam, 40% of the final mark.

For more information please contact botany@otago.ac.nz or visit <http://www.otago.ac.nz/botany>