

School of Biological Sciences



Course Information - 2023

BIOL 496 - Plant Developmental Biology and Biotechnology

0.125 EFTS
Second semester

Course Co-ordinator / *Kairuruku Akoranga*

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Teachers / *Pūkenga*

Dr David Leung

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Description / *Whakamahuki*

In this course, recent advances in plant biology research and their potential for biotechnological applications will be examined. Topics covered in the course include phytoremediation, how plant cells sense and respond to sugar signals, and molecular plant-pathogen interaction.

Intended Learning Outcomes (*Hua Akoranga*) and Associated Assessment (*Aromatawai*)

As a student in this course, I will develop the ability to:

- demonstrate a sophisticated understanding and evaluation of experimental design, methodology and data in the field of plant biotechnology. (assessment task: internal assessment)
- access and critically assess the scientific literature in plant developmental and stress biology. (assessment task: internal assessment)
- develop and trial my own “teaching to learn” techniques. (task: class presentations)

Transferable Skills / *Pūkenga Ngaio*

As a student in this course, I will develop the following skills:

- An ability to manage in a team work environment. Most jobs require interactions with others to accomplish a task to a particular standard and on time. (*Graduate Attribute 2: Employable, innovative and enterprising*)
- A greater competence in evaluation and design of techniques relevant to experimental plant biology. (*Graduate Attribute 2: Employable, innovative and enterprising*)
- An appreciation of opportunities arising from recent advances in science and technology for solving practical problems. (*Graduate Attributes 1 and 4: Critically competent in a core academic discipline of their award and globally aware*)

Assessments and Mark Allocation:

In-term assessment - seminar participation.	10%
In-term assessment - essay	45%
Final oral exam (40 min in pairs; 20 min/person)	45%

Six Tutorial Sessions in 2023

Two tutorial sessions on how plants sense and respond to sugar signals (David Leung) and four tutorials on molecular plant-pathogen interaction (Claudia Meisrimler).

Tutorial Information on Learn

Information about the course, including the course handout and notices along with links to relevant papers for the tutorials, will be placed on Learn.

Seminar participation

Contributions to the six seminars are not marked in a formal sense, but a mark worth 10% of the course will be agreed on by the lecturers at the end of the course. This mark will be based on the following:

- attendance. You are required to attend all six seminars. For this reason, if you cannot attend a seminar you should discuss the reasons for this with the relevant lecturer in advance. If you are ill, you should provide a medical certificate for this.
- quality of presentations. How well prepared were you for the classes? How did you present the research material that was required of you?
- participation. Seminars are not simply about your material. You should be prepared by having read **ALL** the papers being covered in the seminar, and should contribute to the seminar by asking questions and being involved in discussions.

Final exam

The final examination for BIOL496 will be an oral exam organized in pairs (20 min per person). In case of uneven numbers of students in the course, one group will consist of 3 students; in case a student prefers to be examined alone, this can be organized in advance. David Leung and Claudia Meisrimler will examine the oral exam together, which will cover subjects of both lecturers. Specific topics covered per student in the oral exam will be drawn randomly in the last seminar (in total 1 topic David, 1 topic Claudia), which will allow students to prepare more focused on a specific area within material covered in BIOL496. Further details on the oral examination will be made available on LEARN.

Essay [Due date: 20th September]

- * Your essay is worth 45% of the course.
- * Please familiarise yourself with the rules on plagiarism listed on the following pages. If you are uncertain as to what plagiarism is, please consult the course coordinator.
- * The course lecturers will mark the essays independently, and then discuss the mark for the essay.
- * The essay marking schedule will use the University's grading scheme. We have added the following descriptions of what we expect for each of these grades.

A ⁺	> 90%	Excellent critique, clear, concise, very well organised, excellent information.
A	85 - 89%	Very good, good critical comments, well organised, good information.
A ⁻	80 - 84%	Very good, many critical comments, well organised, in need of minor improvements to some aspects of the essay.
B ⁺	75 - 79%	Organised, good information, coverage of issues is largely adequate, some problems with aspects of essay writing, some evidence of critical thinking.
B	70 - 74%	Good, reasonably well organised, adequate information, some problems with many aspects of essay writing, in need of more critical thoughts.
B ⁻	65 - 69%	Mainly descriptive, more information required, some deficiencies in essay writing.
C ⁺	60 - 64%	Deficiencies in content and many aspects of essay writing.
C	55 - 59%	Major deficiencies in presentation or content.
C ⁻	50 - 54%	Major deficiencies in presentation and content.
D	40 - 49%	Inadequate presentation and content.
E	< 40%	Very inadequate presentation and content.

Topics [Need to work on one of the following two topics.]

1. Metal hyperaccumulation in plants: Mechanisms, potential applications and limitations, and strategies to enhance metal hyperaccumulation

(set by DL)

2. Effector-triggered immunity in plant-microbe-interactions

(set by CM)

Feedback

You are welcome and encouraged to ask for feedback about an essay draft from the presenters. Please email an essay draft to the person who set the essay question, or to the course coordinator. They will provide comments on your essay within a week. All requests for viewing drafts should be made about two weeks before the essay must be submitted.

Instructions

For this essay you will be required to complete a literature search on **one** of the two topics listed above, and prepare a written report intended for plant biologists. You are expected to use the library databases to find the relevant information. If you are unfamiliar with these databases, please consult with the course coordinator. It is a requirement that at least half of the cited references are original research papers (not review papers), and that they should have been published within the last five years.

Your essay should be between 2000 and 3000 words in length. This word count does not include words in figure legends or in tables, or words on the cover page or references. Your essay should quote between 20 and 35 references.

In searching for information and in writing your report you should consider the following aspects of your topic.

- Why was a particular avenue of research pursued?
- What are the significant findings?
- What future work is possible?
- Are there any opportunities for biotechnological applications?
- What are the implications and the applicability in New Zealand?

The report should be written in your own words. Ideas and quotes from sources must be referenced.

Format

Please submit your essay as a Word document (or equivalent) using 11 or 12 point font (e.g., Arial, Times New Roman), and either 1.5 or double-spaced.

Your essay should consist of:

- 1 A title page, with the title of your essay, your name, and a word count. This can be calculated directly in the programme Word. This word count does **NOT** include words in figure legends or in tables, nor words on the cover page or in the reference list.
- 2 An abstract of no more than 100 words that summarises your review.
- 3 Introduction
- 4 Presentation, with appropriate sub-headings, of the findings from your library research, your thoughts and critical comments on selected aspects of your topic.
- 5 Conclusions
- 6 References. (You should use the referencing format for the journal *Trends in Plant Science*.)

Your essay will usually be improved by the inclusion of figures. These can either be drawn by you, or you may edit or include figure(s) taken from the literature. If you do the latter, then you must cite the source of the figure.

RULES, REGULATIONS, AND WHAT TO DO WHEN THINGS GO WRONG

[updated March 2023]

If in doubt: ASK! The course coordinator is happy to answer questions. All staff involved in the course are available for advice on specific issues.

What do I do if I have to miss a test/exam or if my performance was impaired?

In Biological Sciences, we require a satisfactory level of achievement in both the theoretical aspects of the discipline and in practical activities. **This means you must attend all class activities (labs, tutorials, fieldtrips)** and submit all items of assessment unless you have a very good reason not to (e.g. medical reasons) and if this has been approved by your course coordinator.

If you feel that **illness, injury, bereavement or other extenuating circumstances beyond your control** prevented you from completing a **test/exam** worth 10% or more of the total course assessment, or if these circumstances affected your performance in such assessments, you should apply for Special Consideration. Applications for Special Consideration should be submitted via the Special Consideration website <http://www.canterbury.ac.nz/study/special-consideration/> within five working days of the assessment or its due date. You should also notify the course coordinator. If you apply for Special Consideration because of medical reasons, you should visit a doctor within a reasonable timeframe (application form available on the website above or from the Student Health Centre).

The Special Consideration provisions are intended to assist students who have covered the work of a course but have been prevented by illness or other critical circumstances from demonstrating their mastery of the material or skills at the time of a test/exam – **they do not excuse you from doing the test/exam** within a reasonable time agreed with the course coordinator.

What do I do if I have to miss a quiz or assignment or if I need an extension?

You cannot apply for Special Consideration if you miss an assessment that is not a test/exam, such as a quiz, lab report, essay, literature review or other assignment, or if the test/exam is worth less than 10% or more of the total course assessment. If this happens or if you need an extension because of **illness, injury, bereavement or other extenuating circumstances beyond your control**, please contact the course coordinator and arrange an alternate activity and/or submission date. You should also do this if you have to miss a laboratory, tutorial or field trip.

What are other valid reasons to miss an assessment or mandatory course activity?

The Special Considerations policy (<https://www.canterbury.ac.nz/about/governance/ucpolicy/student/special-consideration-procedures-and-guidelines/>) outlines only a few kinds of activities that UC considers valid reasons for missing an assessment or mandatory course activity other than those outlined above. These include **involvement in international or national representative sport or cultural groups**. Holiday trips, birthday parties, weddings, work-related commitments etc. are not given special status in this University policy. Please contact your course coordinator to ask for an alternate activity and/or submission date if you are eligible.

Special Consideration for late discontinuation of a course

Students prevented by **extenuating circumstances** from completing the course after the final date for withdrawing, may apply for Special Consideration for late discontinuation of the course. Applications must be submitted via <http://www.canterbury.ac.nz/study/special-consideration/> no later than five working days after the examination period has finished.

Academic Integrity

It is the responsibility of each student to be familiar with the definitions, policies and procedures concerning academic misconduct/dishonest behaviour. Instances of academic misconduct will be dealt with in a serious and appropriate manner. Students should refer to: <https://www.canterbury.ac.nz/about/ako/academic-quality/academic-integrity/>

Plagiarism

It is essential that you are aware that plagiarism is considered a very serious offence by the academic community, the University and the School of Biological Sciences. Plagiarism is defined as taking content from another work or author and presenting it, without attribution, as if it is your own work. Content here includes text (sentences or major parts of

sentences), display items (graphs and tables), and overall structure (the detailed sequence of ideas). Plagiarism includes:

- re-use of previous assignments (even if each individual sentence has been rephrased to say the same thing in different words, if the overall structure is re-used).
- copying of another student's work (with or without their consent).
- the unreferenced use of published material or material from the internet, e.g. cutting and pasting of paragraphs or pages into an essay.
- the generation of text using artificial intelligence technology without disclosure and when it is not intended to be part of an assignment.

For most pieces of in-term assessment you will be given information concerning the use of direct and indirect quotes from previously published work. If you have any doubt about the appropriate use of published material, please speak with an academic staff member. If you are unsure what plagiarism is, seek advice.

It is a School policy that courses will likely that you submit work electronically for subsequent analysis of originality using *Turnitin*. Students agree that by taking courses in BIOL, assessments may be submitted to Turnitin.com for textual similarity review. All submitted papers will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. Use of the Turnitin.com service is subject to the Terms and Conditions of Use as posted on the Turnitin.com site.

Where do I hand in assignments and then collect them once marked?

All assignments should be submitted as directed by the course coordinator. Typically, this will be electronically via Learn for on-line grading and for analysis in *Turnitin*. If a hard copy is requested, assignments should be placed in the designated collection boxes in the foyer of the 2nd floor of the School of Biological Sciences (Julius von Haast building, at the top of the stairs). All assignments must be accompanied by a cover sheet signed by you stating that the submitted work is not plagiarised. Cover sheets are available on top of the collection boxes, or you can download one from the Biology website (<http://www.canterbury.ac.nz/media/documents/science-documents/assignment-coversheet.pdf>).

Marked assignments will be returned through Learn or, if in hard copy, can be collected from the School of Biological Sciences reception, unless directed otherwise by the course coordinator. Teaching staff will endeavour to return work as soon as possible, and should contact you if there are likely to be any delays that will prevent return within the maximum 4-week timeframe.

What if I can't get it finished in time?

Reports and assignments should be handed in on time. Extensions may be granted if you have a valid reason (see above). **If you require an extension, you should request one from the course coordinator** (or the lecturer responsible for marking the work), with as much notice as possible. Please do this BEFORE the deadline for the assignment. **If you have been given an extension and you have been asked to submit a hard-copy of your work, you should hand the work DIRECTLY to the course coordinator** (do not put it in the drop box as it may not be cleared after the due date).

If an extension has not been granted:

- work handed in within 1 hour of the deadline: penalty of up to 5 percentage points of the mark for the assignment (e.g., a mark of 75% might be reduced to 70%).
- work handed in 1 – 24 hours after the deadline: penalty of 10 percentage points of the mark for the assignment (e.g., a mark of 75% is reduced to 65%).
- work handed in 1 – 7 days after the deadline: penalty of 15 percentage points of the mark for the assignment (e.g., a mark of 75% is reduced to 60%).
- work handed in more than 7 days after the deadline will not be marked or earn credit.

What if I have written more than the word or page limit?

If there is a word limit on an assignment, it is usually there to stop you doing too much work and to encourage you to write succinctly. You can be up to 10% over without too much worry, but if the length increases beyond that your mark may suffer due to failure to follow the requirements. If you find yourself way over the word limit talk to the lecturer concerned about how to get your assignment to an acceptable length. Unless specifically advised that there is flexibility, you must adhere to the word limit indicated.

What if I fail part of the course?

In Biological Sciences, we require a satisfactory level of achievement in both the theoretical aspects of the discipline and in practical activities. This means you must attend all class activities and submit all items of assessment unless you have a very good reason not to (e.g. medical reasons). **A student must attain an average score of at least 40% for in-course assessments (e.g. assignments, reports, quizzes) and an average score of at least 40% in**

the exam and/or tests, AND score at least 50% overall for the course, to be awarded a passing grade. See the course outlines for clarification of the assessment items included in each category and ask the coordinator if you are still unsure.

What's the best way to give feedback?

We welcome constructive feedback at all times – help us to make this a valuable course for you. We endeavour to remain approachable at all times. If you would rather give feedback anonymously, please use the online course survey or talk to lab demonstrators, or your class rep (who will all report back to the staff-student liaison committee that includes a representative from each of the undergraduate classes). Class representatives will be selected from each class at the start of course.

What's the best way to complain?

If you feel you have not been fairly treated during this course, please raise the issue with the lecturer or course coordinator in the first instance. Other avenues include your class rep., who can raise issues anonymously, or the UCSA education coordinator.

Grading

A+	90% or above
A	85 – 90
A-	80 – 84
B+	75 – 79
B	70 – 74
B-	65 – 69
C+	60 – 64
C	55 – 59
C-	50 – 54

A restricted pass (R) **may** be awarded to those who are close to a pass (i.e. an overall score of 48-49.9%) AND who have achieved at least a 40% overall score in both in-course assessment and tests/exams. If an R grade is awarded you gain credit for the course but **cannot continue into papers that require this course as a pre-requisite**. NB. The R grade is only available at 100 and 200 level - it cannot be awarded for third year papers.

Failing grades: D 40-49 E 0-39

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A+	90% or above
A	85 – 90
A-	80 – 84
B+	75 – 79
B	70 – 74
B-	65 – 69
C+	60 – 64
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