

Course Information | Ngā Whakamārama- 2024

BIOL/BCHM 111
Cellular Biology & Biochemistry
0.125 EFTS 15 Points
First Semester



Course description | Whakamahuki

Welcome to Biology at the University of Canterbury. In this introductory course on cell biology and biochemistry we aim to provide you with a framework for understanding life at the cellular and molecular levels. The cell is considered the basic unit of life because every organism whether animal, plant, or microorganism consists of cells, or is itself a single cell. As such, the structure and function of the cell impacts on all other levels of life such as organisms, ecosystems and the biosphere. For this reason it is essential for all biologists to understand the fundamentals of cell biology.

In this course you will learn the basic concepts of cell function and how these are interrelated with cell structure that is in-turn dependent on molecular structure and biochemical interactions between the molecules of life.

Course workload

Students are expected to work ~150 hours for a 15 point course. For BIOL/BCHM111 there are 36 hours of lectures, and 21 hours of scheduled lab time (7 x 3 hour labs).

In addition, there is ~1 hour of online assessment each week, and ~1 hour of lab preparation before each lab. This leaves 75 hours (~6 hours per week, or 2 hours per lecture) for independent study (eg going over notes, reading textbook or other materials, preparing for tests/exams, other online activities).

Textbook | Pukapuka ako

There are a variety of resources that will support your learning in the course. There is an open access textbook that contains much of the course material at <https://openstax.org/details/books/concepts-biology>

If you prefer a more detailed textbook, you can refer to *Biology, A Global Approach. 11th or 12th edition, Campbell et al.* This is available from the University Bookshop at about \$160, or electronic versions are available from www.pearsoned.co.nz. Several copies are available on three-hour restricted loan at the Lending Desk in the Central Library and a few copies will be available during laboratories.

Course coordinator | Kairuruku Akoranga

Dr Grant Pearce, Room 418, School of Biological Sciences (SBS), email biology111@canterbury.ac.nz

Learn | Ako – learn.canterbury.ac.nz

The Learn website contains material for all your courses. Here you will find files of material such as lecture summaries, relevant articles to read, past test papers and advice on optimising your performance in tests and exams. Individual lecturers will keep you informed of material which they have placed on "Learn".

Powerpoint projections and audio recordings of each lecture are available from EchoCenter in Learn. Marks for the labs will be posted on Gradebook so that you can keep track of your progress.

From time to time, we will email you information about various aspects of the course. These emails will be sent to your UC email address. **Please check your UC email regularly!**

Lecturers | Pūkenga



Dr Grant Pearce

General introduction to the course and overview of biochemistry, structure and function of biomolecules

Julius von Haast 418

grant.pearce@canterbury.ac.nz



Dr Ashley Garrill

Functional systems: metabolism, energetics and membrane transport

Julius von Haast 420

ashley.garrill@canterbury.ac.nz



Dr Vanessa Morris

Functional systems: cellular organisation, motility, communication and reproduction

Julius von Haast 422

vanessa.morris@canterbury.ac.nz

Graduate Profile | Āhuratanga Taura

This course will provide students with an opportunity to develop these UC Graduate Attributes (GP) and Kaupapa (K) (www.canterbury.ac.nz/study/graduate-profile/students/what-are-the-graduate-attributes/):

- GP1 Critically competent in a core academic discipline.
- GP2 Employable, innovative and enterprising.
- GP3 Biculturally competent and confident: K1 A process of self-reflection on the nature of 'knowledge' and 'norms'.
- GP5 Globally aware

Intended Learning Outcomes | Hua Akoranga and Associated Assessment | Aromatawai

- Ability to discuss the diversity and complexity of different biological macromolecules (pre-lab quizzes, mid-term tests, final exam) (GP1, GP2, GP5)
- Knowledge of the central dogma of biology, and how information is stored and expressed (pre-lab quizzes, mid-term tests, final exam) (GP1, GP2, GP5)
- Understand how different forms of energy are used in biological processes (pre-lab quizzes, mid-term tests, final exam) (GP1, GP2, GP5)
- Appreciation of the cellular nature of life as the core theme of biology (pre-lab quizzes, mid-term tests, final exam) (GP1, GP2, GP5)
- Familiarity with the basic principles of cell structure and organization (pre-lab quizzes, mid-term tests, final exam) (GP1, GP2, GP5)
- Experience in the collection and interpretation of biological data in the laboratory (lab assessments) (GP1, GP2, GP5)

Transferable Skills Register | Pūkenga Ngaio

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

- explain the big picture aspects of current challenges in the molecular life sciences. (GP1, GP2)
- identify, locate and use a range of different sources of information. (GP1, GP2, GP3, GP5)
- communicate information to others in a clear and concise fashion. (GP1, GP2, GP3, GP5)
- accurately prepare and use reagents and perform the required experiments. (GP1, GP2)
- develop a testable and falsifiable hypothesis when presented with an observation. (GP1, GP2)
- access and interpret safety information and conduct lab work safely and ethically. (GP1, GP2)
- give and take directions to be an effective team member. (GP1, GP2)

Timetable | Wātaka

The most current time and locations for lectures and laboratories can be found using the <https://mytimetable.canterbury.ac.nz> website or the CIS website. All lectures are recorded, and will be available on the course website soon after recording. You are responsible for information given during lectures - therefore it is important that you attend or view all lectures. Students should note that in the Science Faculty the average student is responsible for approximately 3 hours of additional study for each hour of lecture at the 100-level.

Assessment | Aromatawai

| | |
|--|-------------|
| Test on Lectures 1 – 12 | 15% |
| The test will last 1 hour and will consist of short answer questions. You will be advised of the test timing and location in lectures and via Learn. | |
| Weekly lecture quizzes | 24% |
| Each week there will be a short quiz covering material from the previous week's lecture material. These quizzes will be online and open book and are designed to help with your weekly study. | |
| Final Exam on Lectures 13 – 36 | 30 % |
| This will be held during the official examination period in the mid-year break (date to be published at www.canterbury.ac.nz during the third week of Semester 1). It will last 2 hours and will consist of short answer questions. | |
| Laboratories | 31% |
| The labs make up 31% of the total course mark. Part of this (12% of course mark) consists of an online test that must be completed each week before you come to the lab . The remaining lab mark (18% of the course mark) will be based on completing the sections of the lab worksheet. In order to pass the course, you must achieve >40% in both the lab and test/exam components of the course. | |

Special Consideration

If you consider that you have been prevented from completing any item or items of assessment in this course, or consider that your performance in completing such work was impaired by illness or injury or bereavement or any other critical circumstance then you may apply for special consideration for the work concerned. See the section at the end for more details, or talk to Grant. For further details of the system, see <https://www.canterbury.ac.nz/study/special-consideration/>

Laboratories

Location, time and things to bring

The laboratories start in week 2 of the first semester, ie the second week of lectures. The current time and locations for labs can be found using the <https://mytimetable.canterbury.ac.nz>

You **must** come equipped with a **lab coat, safety glasses, and your lab manual**. You will need to bring a calculator to some labs (as indicated in the lab manual). The wearing of a laboratory coat and safety glasses is compulsory. These can be purchased via website at <https://www.canterbury.ac.nz/science/current-students/shop/> Pickup times and details are indicated when you purchase online.

Lab skills register

| Scientific Process | Technical | Communication | Community |
|---------------------------------------|---------------------------------------|---|-------------------------|
| Follow a protocol | Develop basic pipetting skills | Note practical observations | Work safely |
| Understand and recall information | Understand UV-vis spectrophotometry | Present results as text, table or graph | Work with a team member |
| Comprehend scientific terminology | Ability to use a microscope | Prepare scientific illustrations | |
| Develop hypotheses | Understand dilution factors | Discuss the importance of results | |
| Predict outcomes | Comprehend and carry out calculations | | |
| Appreciate different sources of error | Develop an experimental protocol | | |
| Recognise the need for controls | | | |

Frequently asked questions

If you can't find what you are looking for below, just email biology111@canterbury.ac.nz

Please note that with large numbers of students in the course, there may be a delay in replying. If the answer to your question is included below, you may not get a reply. Please do not expect a reply outside of normal working hours.

What if I can't make it to one of the lectures?

No problems! If you have a clash with another course or some other reason, all BIOL111 lectures are recorded and available on the Learn site (via the Echo link) within 24 hours. However, we absolutely recommend coming to the lectures - hopefully, we will have your undivided attention for 50 minutes, and you will be immersed in the experience, which will help reinforce the material.

How do I allocate myself to a lab?

You can use your timetable to allocate yourself to a lab stream. Your choice of stream is fixed for the semester, so please choose carefully! If you have clashes, please contact biology111@canterbury.ac.nz and we will be able to help you arrange your lab. There are a limited number of seats in each lab stream and we cannot add you to a stream that is already fully booked.

Where do I pick up a lab manual?

An electronic version of the lab manual is available on the Learn site. Physical copies can be picked up outside the Biology reception area (Level 2, von Haast building) or in the labs.

How do I get a copy of the textbook?

We use an online, open-access (FREE!) textbook, which you can access here. You will be allocated reading from this textbook which will help you get the most out of your lectures. Allocated reading may be supplementary to that which is presented in class, and is examinable, so you must engage with the readings.

What if I miss one of the pre-lab quizzes or weekly lecture quizzes?

The pre-lab quizzes and weekly lecture quizzes are open for one week, so we recommend doing them early (which also gives you the chance to have another go if you need to!) in case anything happens later in the week. We take the top 6 out of 7 marks for the lab quizzes and the top 10 out of 12 marks for lecture quizzes, so you will not lose any marks for missing a test. Once the quizzes close, the answers become publicly available, so it is difficult for us to reopen them again for you.

What if I can't make it to one of the labs?

The labs are an important part of the course, and we expect you to attend all of them. However, sometimes things happen beyond our control, which means you miss a lab. Don't worry if you miss only one lab – we take the top 6 marks out of the 7 labs so you will not be penalized. If possible, come along to one of the other streams later in the week. If you only miss one lab, you do not need a medical certificate - if you are infectious, it is best not to expose the world to your germs so stay at home. If you are missing more than one lab, you may need a medical certificate or other evidence, and alternative assessments will be provided for the missed labs

The course isn't working out for me - what can I do?

Come and talk to the lecturers if you are having any issues! We appreciate that while we are passionate about biochemistry and cell biology, you might not be. If you decide after a couple of weeks that the course is not for you, you can withdraw with a full fee refund by Sunday 3 March. You can still withdraw from the course (without a refund) up until Sunday 12 May. That way your academic transcript will show 'withdrawl' rather than a fail grade if you just stop turning up.

What if something happens (illness, injury, bereavement, or other extenuating circumstances beyond your control) around the time of the test or exam?

You should apply for Special Consideration and notify the course coordinator. Applications for Special Consideration should be submitted via the Examinations Office website within five days of the assessment. If this is for medical reasons you should visit a doctor within 24 hours of the assessment (application form available online or from the Student Health Center).

If you feel that your performance in such assessments has been impaired, we check how your impaired performance compares to your unimpaired performance in other course assessments.

If you were unable to attend the assessment, our preference is to arrange for you to take the assessment at a later date. If this is not possible, we will try to work out a grade for the missed assessment based on your other course assessments.

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 assessment - they are not designed to allow students who have been prevented from learning the material from passing the course. Many second-year courses assume that you have the body of knowledge covered in the first-year courses, so if you are allowed to proceed without having the prerequisite knowledge, you will be unlikely to succeed. Students who have been prevented from learning the material due to unforeseen circumstances can apply for a late course withdrawal and fee refund.

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.

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 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

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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 |
| 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
