

BIOL/BCHM 111

Cellular Biology & Biochemistry

0.125 EFTS 15 Points

First Semester

Description and Goals

- 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.

Learning Outcomes

- An appreciation of the cellular nature of life as the core theme of biology
- Knowledge of basic principles of cell structure and organisation
- Knowledge of basic principles of cellular biochemistry and molecular biology
- Attainment of basic skills in the collection and interpretation of biological data in the laboratory
- An appreciation of the role of cell biology and biochemistry to human endeavors

Course coordinator

Dr Grant Pearce, Room 624, School of Biological Sciences (SBS), email
grant.pearce@canterbury.ac.nz

IF YOU HAVE ANY PROBLEMS OR COMMENTS OF ANY SORT PLEASE CONTACT THE COURSE COORDINATOR



PLEASE READ THIS HANDOUT CAREFULLY AND KEEP IT FOR REFERENCE

Lecturers



Dr Grant Pearce

Julius von Haast 624

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Dr Ashley Garrill

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Dr Vanessa Morris

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Summary of the Course Content

Lectures 1-12 Dr Grant Pearce

*General Introduction to the course and overview of cell biology and biochemistry.
Structure and function of biomolecules*

Lectures 13 - 23 Ass Prof Ashley Garrill

Functional Systems: Metabolism, Energetics and Membrane Transport.

Lectures 24 - 35 Dr Vanessa Morris

Functional systems: cellular organisation, motility, communication and reproduction

There will be no lecture on 27 April (ANZAC day observed)

Assessment

Test on Lectures 1 – 12	23%
You will be tested on material from lectures 1 - 12 . It will last 1.5 hours and will consist of short answer and multiple choice questions. IMPORTANT: note that this test is equivalent in importance to the final exam, ie. 1/3 of overall lecture course marks. You will be advised of the test timing and location in lectures and via Learn.	
Final Exam on Lectures 13 – 34	47%
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). You will be tested on material from lectures 13 – 34 . It will last three hours and will consist of multiple-choice questions and short answer questions. Further details will be given during the course.	
Laboratories	30%
The labs make up 30% of the total course mark. Part of this (12% of course mark) consists of an online test that must be completed before you come to the lab . The test will consist of 10 short answer or multiple choice questions, and must be completed by 12pm Monday for each week that the labs are running. If you have failed to complete this test in time, you can contact the course coordinator (grant.pearce@canterbury.ac.nz) to ask for an extension. The remaining lab mark (18% of the course mark) will be based on completing the sections of the lab manual. In order to pass the course, you must achieve >40% in both the lab and test/exam components of the course.	

Lectures

The most current time and locations for lectures can be found using the <https://mytimetable.canterbury.ac.nz> website or the CIS website. You are responsible for information given during lectures -- therefore it is important that you attend 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.

Learn – 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!**

Textbook

Biology, A Global Approach. 10th or 11th edition, Campbell et al

This is the same text used for the three core biology courses (BIOL111, BIOL112, and BIOL113). 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 (but it is far better if you can bring your own).



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** (details on getting your lab manual will be given in the first introductory lecture). We recommend that you bring B or HB pencils, an eraser, a ruler and your personal copy of the textbook. A few textbooks will be available for general use in the laboratory. You will need to bring a calculator to some labs (as indicated in the lab manual).

Items to be purchased for laboratories

The wearing of a laboratory coat (~\$32) and safety glasses (~\$10) is compulsory. These can be purchased by buying a ticket from the Copy Centre located in the James Hight Undercroft, open 9 am – 4pm Mon-Fri. This ticket can then be exchanged for a lab coat and glasses in the atrium inside the southern entry of the Ernest Rutherford Building 8.30-10 am and 12.30 -1.30 pm Mon-Fri). Disposable gloves are available in the laboratory for those who might need them.

Laboratory Class Schedule

There are 7 laboratory classes. The schedule for the labs is as follows:

24 Feb	Lab 1	Lab Skills Session	Grant Pearce
2 Mar	Lab 2	Carbohydrates	Steven Gieseg
9 Mar	Lab 3	Proteins (& enzymes)	Grant Pearce
18 Mar	Lab 4.	Respiration	David Leung
4 May	Lab 5	Photosynthesis	David Leung
11 May	Lab 6	Seeing Cells	Ashley Garrill
18 May	Lab 7	Cell Division	Vanessa Morris

IMPORTANT - Reading for Laboratories

In order to arrive at the laboratories fully prepared you are advised to **read the laboratory schedules in advance**. It is a good idea to read relevant pages in the textbook also.

Missed Laboratories

If you have missed a laboratory due to illness, you **must contact the course coordinator as soon as possible**. If you miss one or two laboratories then a **medical note** may be required. In exceptional circumstances, and on presentation of satisfactory written evidence, other reasons (eg. bereavement) for missing a lab might be accepted. Students that miss a lab will be required to undertake alternative assessment for the lab. If you miss three or more lab assessments or consider that your performance in completing such work was impaired by illness or injury or bereavement or any other critical circumstance then you must apply for special consideration (see course outline & course coordinator).

Accidents

- **All** accidents, in which a person is injured, no matter how slightly, must be reported to the laboratory instructor **immediately**.
- If any equipment is broken or not functioning please report this to the laboratory instructor **immediately**.



Special Consideration

If you consider that you have been prevented from completing any item or items of assessment in this course worth 10% or more of total course marks, 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 the [Enrolment Handbook](#). If special consideration is required for the laboratory quizzes then please see Grant for details.

Feedback from 2019

Every few years, we survey the class to get feedback (we also welcome feedback at any time, either to the course coordinator, any of the lecturers, lab demonstrators, or via the undergraduate coordinator!). Students are asked whether they strongly agree (5) or strongly disagree (1) with the questions.

Question	Median student ratings	Selected comments
The materials provided helped me to understand what	4.19/5 (4.08 in 2016)	• The teachers did come up with the occasional bits of information that wasn't available from the text book , but I guess that's what university is about exploring further than the given

was required to succeed in this course.		<p>topic. Really appreciated when video's were used to explain or make information come alive and or to really get the message home as a form of revision.</p> <ul style="list-style-type: none"> • Some of the content of the lab manual was not always clear, and it was not always clear what was required or being asked. <i>[Response – we have updated the lab manual again for 2020, and if anything is unclear, please let us know at the time!]</i>
The organisation of this course helped me learn.	4.15/5 (4.02 in 2016)	<ul style="list-style-type: none"> • I loved that he did small recaps of the previous lecture before continuing on with the new one • Agree, although may have made more sense to me to learn about the cell beforehand. Either way it all fits in together. • Slides were well organised and concise • I would have preferred to start with the cell biology and then move into the biochemistry. • Yes the huge amount of reading at the beginning of the course set the tone for what is expected at university. • I have had to create an overview and a big picture of the entire course as a whole, but I find the summaries of the lectures (at the beginning or end?) really helpful. • All of the lectures were structured well, and were separated into clear topics
I found the workload was appropriate to the level of the course.	4.16 (3.93 in 2016)	<ul style="list-style-type: none"> • Yes it's lovely now that the reading has lightened but still really important form of revision. The text book is a fabulous resource, well set out and careful explanations. • As a course without prerequisites, the rate at which the content was taught was too fast. It would be better to have an introductory biology course for those who haven't taken the subject before, in which the material can be taught at a slightly slower pace, than putting those who have not taken biology previously in with those who have. The former are confused and struggling, and the latter either bored or coasting through. Perhaps a division like CHEM114 and CHEM111 but for biology would be more appropriate. <i>[Response – In previous years, the student numbers have not justified having two streams, but with increased enrollments, this may be an option. BIOL116 in S2 is taught at a slower pace than BIOL111]</i>
I found the assessments appropriate for the course	4.20 (4.10 in 2016)	<ul style="list-style-type: none"> • Would have been nice to have 3 smaller tests (1 at the end of each lecturer) instead of 2. The set up of BIOL113 in this way worked really well for me. <i>[Response – we are looking into this as an option, and will be surveying the class with regards to this in 2020]</i> • Again a new culture having to work over weekends and put in so much effort on a Sunday night. but every lab was an important step and every lab test especially once I learnt how to research them were useful preparation and helpful reinforcement of the weeks lectures. • It was easier to understand the lab assessments and the labs themselves after I had attended the lectures related to them. • As expected the labs were a big part of the course, which is good preparation for a future in science especially for those who haven't had much previous exposure to practical work.
Where I sought feedback on my assessments, I found it helpful.	3.92 (3.82 in 2016)	<ul style="list-style-type: none"> • I only asked once when I found the photosynthesis assessment hard and wanted an explanation but none was given. • Really enjoyed the labs on your part of the course and the interaction with the demonstrators

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

[updated 12 June 2018]

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

What do I do if I have to miss something or if my performance was impaired?

If you feel that **illness, injury, bereavement or other extenuating circumstances beyond your control** prevented you from completing an item of assessment worth 10% or more of 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 <http://www.canterbury.ac.nz/study/special-consideration/> and you need to notify the course coordinator *within five days* of the assessment or its due date. If you apply for Special Consideration, because of medical reasons, you should visit a doctor within 24 hours of the assessment (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 assessment – they do not excuse you from doing the assessment within a reasonable time agreed with the course coordinator. You should expect to be required to submit additional work if you miss a major assignment (e.g. a field trip for which a major write-up is required).

In rare cases you may not be able to complete an assessment or attend a field trip, because of **involvement in international or national representative sport or cultural groups**. In such cases you should also apply for Special Consideration. Please review the Special Considerations policy because very few kinds of activities will be eligible for consideration (e.g. holiday trips, birthday parties etc. are not given special status in the University policy).

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/> within five days of the end of the main examination period for the semester.

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.

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 are in any doubt about appropriate use of published material, please speak with a member of academic staff. If you are still unsure what plagiarism is, then seek advice.

It is a School policy that courses may request 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 posted on the Turnitin.com site.

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

All 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), unless directed otherwise by the course coordinator. 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>). In addition, you may also be asked to submit your work electronically (via Learn) for analysis in *Turnitin*.

Marked assignments 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. **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 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 must be handed in by the due date to gain full credit
- work handed in up to 7 days after the deadline will be marked, but the marks will be discounted 25% before they are recorded to the student's credit
- any work handed in more than 7 days after the deadline date 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. It also makes things easier to assess. 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.

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) 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