Course Outline

BABS2202

Molecular Cell Biology 1

School of Biotechnology and Biochemical Sciences

Faculty of Science

Term 2, 2020

1. Course schedule and structure

Week (Begins)	Lecture 1 Monday 9-10 am, Asynchronous	Lecture 2 Wednesday 1-2 pm, Asynchronous	Tutorial Friday 9-10 am, Synchronous	Lecture 3 Friday 5-6 pm; Asynchronous	Practical Synchronous
Week 1 (1 June)	Introduction and lab preview (LLM)(NW) (NWG)	Cellular reproduction (LLM)	**LECTURE**: Regulation of the cell cycle 1 (LLM)	Regulation of the cell cycle 2 (LLM)	Lab Skills and Safety (online)
Week 2 (8 June)	PUBLIC HOLIDAY	The birth of cells (LLM)	**REVISION** (LLM)	End of the cycle (LLM)	Spectrophotometry and Graphing
Week 3 (15 June)	Cancer (LLM)	Alternative cell cycles (LLM)	**REVISION** (LLM)	Prokaryotic reproduction (NWG)	Cell growth & viability 1 (Mammalian)
Week 4 (22 June)	Immunology 1 (AC)	Immunology 2 (AC)	**MID-SESSION EXAM**	Immunology 3 (AC)	Cell growth & viability 2 (Bacteria and Yeast)
Week 5 (29 June)	Immunology 4 (AC)	Cell-cell communication (NWG)	**REVISION** (AC)	Signalling pathways 1 (NWG)	Effect of drugs on cell growth & viability
Week 6 (6 July)	FLEXIBILITY WEEK				
Week 7 (13 July)	Signalling pathways 2 (NWG)	Signalling pathways 3 (NWG)	**REVISION** (NWG)	Signalling pathways 4 (NWG)	Flow Cytometry/Cell Cycle
Week 8 (20 July)	Cell-ECM interactions (NW)	Cell-ECM interactions (NW)	**REVISION** (NW)	Cell-cell interactions - Biofilms (BB)	**CELL GAME PRESENTATIONS**
Week 9 (27 July)	Cell-environment interactions (BB)	Interactions between pro and eukaryotes (SE)	**REVISION** (BB)	Last lecture – course review and exam format (LLM)(NW) (NWG)	ELISA / Bacterial cell-cell communication
Week 10 (3 Aug)			**PRACTICAL EXAM**		

LLM: A/Prof Louise Lutze-Mann
NW: A/Prof Noel Whitaker
NWG: Dr Nirmani Wijenayake
SE: A/Prof Suhelen Egan
AC: A/Prof Andrew Collins
BB: Dr Brendan Burns

2. Staff

Position	Name	Email	Consultation times and locations
Course Convenors	A/Prof Noel Whitaker	n.whitaker@unsw.edu.au	By appointment
	Dr Nirmani Wijenayake	b.wijenayakeg@unsw.edu.au	
	A/Prof Louise Lutze-Mann	l.lutze-mann@unsw.edu.au	
Lecturers	A/Prof Louise Lutze-Mann	l.lutze-mann@unsw.edu.au	
	Dr Nirmani Wijenayake	b.wijenayakeg@unsw.edu.au	
	A/Prof Andrew Collins	a.collins@unsw.edu.au	
	Dr Brendan Burns	brendan.burns@unsw.edu.au	
	A/Prof Suhelen Egan	s.egan@unsw.edu.au	
	A/Prof Noel Whitaker	n.whitaker@unsw.edu.au	
Demonstrators	Please check Teams in Week 2.	Contact your demonstrators through Teams groups.	During Lab times only.

3. Course information

Units of credit: 6

Pre-requisite(s): BABS1201 and CHEM1011 or CHEM1031

Teaching times and locations:

Component	Hours/Week	Day and Time	Location
Lecture	3	Monday 9 – 10 am Wednesday 1 – 2 pm Friday 5 - 6pm	Asynchronous Asynchronous Asynchronous
Tutorial	1	Friday 9 - 10am	Synchronous
Laboratories	3	**One of these lab options** Tuesday 10am – 1pm Tuesday 2pm – 5pm Wednesday 10am – 1pm Wednesday 2pm – 5pm	Synchronous

3.1 Course summary

Cells are not only the basic building blocks of all organisms they are also the source of the vast diversity that characterizes life on earth. This course provides an opportunity to explore the nature of cells, both the unity and the breadth of cell structure and function, from prokaryote to eukaryotes. It builds on the introduction contained in BABS1201. The major topics covered include: the cell cycle and the processes that regulate entry into, transition through and exit from the cycle; mitosis, meiosis, cyclins and cdks, apoptosis and cancer; cellular integrity and movement; interactions of cells with each other and their environment, signalling pathways, immunology, chemotaxis and sensing, biofilm formation and interactions between prokaryotic and eukaryotic cells. Practical work illustrates and extends the lectures. Online resources are designed to reinforce the lecture material and to emphasize the development of writing skills, group work and the process of scientific enquiry.

3.2 Course aims

The aims of this course are to provide students with an overview of: the diversity of cell types, how they divide, grow and form communities; the interactions of cells with each other and their environment; and the processes that regulate these interactions.

The course also aims to develop students' analytical and quantitative skills thorough a range of laboratory exercises and to enhance their understanding of the research methods that are employed in cell biology.

3.3 Course learning outcomes (CLO)

At the successful completion of this course you (the student) should be able to:

1. Discuss the processes that allow a cell to transit from birth to death.
2. Apply the knowledge of how cells work to real world applications.
3. Apply experimental techniques relevant to the field of cell biology.
4. Communicate scientific concepts verbally and in written form.

3.4 Relationship between course and program learning outcomes and assessments

Course Learning Outcome (CLO)	Relevant Science Graduate Attributes	Related Tasks & Assessment
Discuss the processes that occur inside a cell from birth to death.	Information literacy	***Related Tasks:*** Lectures and tutorials ***Assessment:*** Mid-session and final exam
Apply the knowledge of how cells work to real world applications.	Research, inquiry, and analytical thinking abilities Communication	***Related Tasks:*** Lectures, tutorials, and labs, online lecture reviews ***Assessment:*** Mid-session, practical and final exams
Learn experimental techniques relevant to the field of cell biology.	Teamwork, collaborative and management skills Research, inquiry and analytical thinking abilities Ethical, social and professional understanding	***Related Tasks:*** Labs, pre-lab quizzes ***Assessment:*** Practical exam
Communicate scientific concepts verbally and in written form.	Communication Research, inquiry and analytical thinking abilities Teamwork, collaborative and management skills	***Related Tasks:*** Labs ***Assessment:*** Practical e-lab notebooks and game design group project

4. Assessment

As the assessments will be online this term, we will be asking you to declare the following for each assessment task; 1. all of your answers are your own or your teams work unless acknowledged or otherwise permitted, and 2. you understand that, if any form of academic misconduct is detected which breaks the Student Code, the University may take disciplinary action under the Student Misconduct Procedure.

4.1 Assessment tasks

Task / Knowledge and abilities assessed / Assessment Criteria	%	Date of		Feedback		
		Release	Submission	WHO	WHEN	HOW
Assessment 1: Mid-session exam						
What is assessed: Mid-session exam covers all the lecture content of Louise's lectures. There will be a mixture of multiple choice and short answer questions that test your understanding of the content as well as factual knowledge. 45 minutes.	**15%**	Week 4	Week 4 Friday 9am	Course coordinators	Week 6	Moodle gradebook.
Assessment 2: Examination on practical material						
What is assessed: The practical exam covers all the lab content from the semester. A mixture of multiple choice and short answer questions that test your understanding of the lab content. 1-1.5 hours	**20%**	Week 10	Week 10 Friday 9am	Demonstrators	One week later	Moodle gradebook.
Assessment 3: Cell Game Project						
What is assessed: Students will form a group of 3-4 students within their tutor group and come up with a game idea to teach a concept learned in the course that will be presented to the rest of the tutor group. The assessment requires you to evaluate scientific content learned in the course, work effectively in a team and improve your communication skills (10%). You will also need to prepare a briefing document about the underlying science that informs your game and this briefing document is to be submitted individually (15%).	**25%**	Week 5	Week 8 During lab	Demonstrators	Week 10	Verbal feed-back and marks on Moodle gradebook.
Assessment 4: Final Exam						
Knowledge and abilities assessed: Final exam will cover all the lecture content other than Louise's lectures. There will be a mixture of multiple choice, short answer, and essay style questions that test your understanding of the content as well as factual knowledge. 2 hours.	**40%**	N/A	Exam Period	N/A	N/A	N/A

4.2 Details about each assessment

Practical Work (20%)

The practical program is designed to continue your training as an experimental scientist, to illuminate and extend the material presented in the lectures and to expose you to the techniques and data analyses used in modern molecular cell biology.

- **Lab Book (formative)**
  Requirements: As part of your assessment, you are expected to keep an electronic lab notebook, in OneNote (within Teams) , in which you will record experimental details, results and to answers to discussion questions. Your electronic lab notebook should also be used to record information provided by the demonstrators in talks introducing experiments or as experiments progress, to write answers to questions asked in the practical notes and to keep a record of experiments run as demonstrations. You should ensure that you provide a clear presentation of results, with the inclusion of sample calculations where appropriate. The discussion should include an interpretation of the results, and your assessment of whether the results are reliable. If the experiment failed to yield the expected result the possible reasons for this should be discussed along with assumptions that have been made in interpreting the results etc. You can find information relevant to the discussion section in resources such as journal articles, lectures or the textbook.

  Submission: This is a formative assignment and requires no submission.

  Feedback: Answers to lab discussion questions and help with experimental results will be provided during lab time by your demonstrators. You will collate this information on Lab Archives and keep your lab book up to date as this information will be essential to study for your practical exam.

- **Practical Exam (20%)**
  Requirements: The practical exam will be a written exam that will test your understanding of experimental design, results and outcomes. You will be assessed on your ability to interpret experimental data, form conclusions based on experimental data, and to assess the validity and accuracy of experiments and experimental set up. Below is an example question that can be found in the practical exam.

  The concentration of L-glutamine in mammalian tissue culture medium is much higher than that of the other amino acids because:
  A. *It is a cheap supplement.*
  B. *Mammalian cells in culture cannot utilise glucose and need to use L-glutamine as an energy source.*
  C. *The conversion of L-glutamine to D-glutamine is inefficient.*
  D. *Is used as a pH indicator, changing colour at pH < 7.0.*
  E. *It is unstable and labile (quickly breaks down) and must be supplemented in the media.*

  Submission: Conducted in Week 10 – Friday 9 am

  Feedback: General feedback on the exam will be provided via Teams.

Cell Game Project (25%)

Requirements:
The game presentation (10%) - You will create a design document for an instructional game, based on the cell biology material you have been learning in BABS2202. Working in a team, you will produce a description of the game, with an outline of the game elements such as the board, or cards, or characters that would be used in your game. You will not produce a polished, complete game, just a video presentation that will be presented to the rest of your demonstrator group in Week 8. More details will be provided on Moodle closer to the date.

The briefing document (15%) - In addition, you will individually prepare a 1-2 page document that provides background information on the science behind the game your team designed. You may include figures and tables to support your ideas. More details will be provided via Teams closer to the date.

Submission: The completed game idea should be made into a video and submitted on Moodle. The briefing document should be submitted into turn-it-in on Moodle.

Feedback: On the day of your presentation, your demonstrators will provide you with verbal feedback on your presentation. The briefing document will be marked by your demonstrators and the marks and feedback on this document will be posted on Moodle.

Mid-session (15%) and Final Exams (40%)

Requirements: The mid-session and final exams will examine your understanding of the lecture material covered in the course.

Submission: The mid-session exam will occur during on Friday at 9 am in Week 4. The final exam will occur during the final exam period at the end of the semester.

Feedback: Feedback for the mid-session exam will be provided on Moodle.

4.3 Late penalties for assessments

If assessments are not submitted by the due date, a late penalty of 10% per day will be applied.

4.4 Special Consideration and supplementary exams

Missed a practical class or a small group tutorial:

Attendance in practical classes and tutorials is compulsory. If you missed one of these due to illness or other misadventure you must submit official documentation to your lab demonstrator, tutor or course coordinator via email as soon as possible. If you miss more than two labs you may fail the course for not satisfactorily completing the practical program for the course. Separate “CatchUp” labs/skill sessions are not conducted but if you are able to attend an alternative lab or skill session during the week of your absence, you may contact the course coordinator to ask for permission to do so. If you cannot attend an alternative lab/skill session, then you will need to catch up on missed work by speaking to your demonstrator/tutor or class colleagues.

Missed an exam or an assessment:

Students who believe that their performance, either during the session or in the end of session exams, may have been affected by illness or other circumstances may apply for special consideration. Applications can be made for in-session assessments tasks and final examinations.

You must submit the application prior to the start of the relevant exam, or before a piece of assessment is due, except where illness or misadventure prevent you from doing so. If you become unwell on the day of the exam or fall sick during an exam, you must provide evidence dated within 24 hours of the exam, with your application. You must obtain and attach Third Party documentation before submitting the application. Failure to do so may result in the application being rejected.

UNSW has a fit to sit/submit rule which means that if you sit an exam or submit a piece of assessment, you are declaring yourself fit to do so.

Further information on special consideration can be found at https://student.unsw.edu.au/specialconsideration.

HOW TO APPLY FOR SPECIAL CONSIDERATION

The application must be made through Online Services in myUNSW (My Student Profile tab > My Student Services > Online Services > Special Consideration).

Students will be contacted via *their official university email* as to the outcome of their application. It is the responsibility of all students to regularly consult their official student email accounts and myUNSW in order to ascertain whether or not they have been granted further assessment.

SUPPLEMENTARY EXAMINATION DATES

The University does not give deferred examinations. However, further assessment exams may be given to those students who were absent from the mid-session or final exams through illness or misadventure. Special Consideration applications for these tests will only be considered after the final examination period when lists of students sitting supplementary exams/tests for each course are determined at School Assessment Review Group Meetings. Students will be notified via the online special consideration system as to the outcome of their application. **It is the responsibility of all students to regularly consult their official student email accounts and myUNSW to ascertain whether they have been granted further assessment.**

T2 supplementary exam dates

Mon 7 – Fri 11 Sept 2020

Further assessment exams will be offered on one of these days **ONLY** and failure to sit for the appropriate exam may result in an overall failure for the course. Further assessment will **NOT** be offered on any alternative dates.

5. Strategies and approaches to learning

5.1 Learning and teaching activities

Activities	Expectations
Lectures	Students should watch ALL lectures and try to take comprehensive lecture notes and refer to text-books. DO NOT rely solely on lecture hand-outs, it is not possible to get a good understanding of a topic just by reading the lecture slides. The lecturer who presents the lectures will set the examination questions and will also be responsible for marking the relevant examinations/tests. The students who perform best in exams are those who attend all the lectures.
Online Lecture Reviews **COMPULSORY**	A total of 6 lecture reviews are scheduled foremost Fridays at 9am. These lessons will provide students with the opportunity to revise course content and reflect upon their own level of comprehension of the material presented in lectures and ask questions of the coordinator and/or the lecturers.
Practicals **COMPULSORY**	Students must attend all the labs and actively participate in experiments and group discussion. A large component of your final marks is dependent on your performance in the practical component.

5.2 Expectations of students

- Students are expected attend all compulsory classes and be punctual. Arriving later than 5 minutes past the hour could result in being marked absent for the class. Expected attendance at compulsory classes is 100%. Less than 100% attendance without proper documentation will result in an unsatisfactory fail.
- Students are expected and encouraged to participate in review lecture and lab discussions. Discussions do not have right or wrong answers and should be used as an opportunity to enhance your understanding of the course content, communication skills, critical thinking, and problem-solving skills.
- All course content will be distributed through the course Moodle and Teams site. It is the student's responsibility to check Teams every day and read the regular announcements to ensure they are up-to-date with course developments.
- Lab components of this course will be carried out on OneNote, which will be used as an online electronic lab notebook. Students must watch videos and read the relevant information on how to use this electronic lab notebook prior to the first lab in Week 2.
- All student enquiries other than those of personal nature must be posted onto the course discussion board on Moodle. These messages will be answered within 24 hours during the working week.

- Any personal enquiries could be emailed to the course coordinators. Please ensure that you cc all three course coordinators on the message. When sending an email to the course coordinators, a student must provide their name, student number and the course they are enrolled in. Personal emails may take up to 72 hours to receive a reply.
- If you are struggling to keep up with the course, please contact the course coordinators as soon as possible.

6. Academic integrity, referencing and plagiarism

Referencing

Referencing is a way of acknowledging the sources of information that you use in your assignments. You need to provide a reference whenever you draw on someone else's words, ideas or research. Not referencing other people's work will be constituted as plagiarism.

Further information about referencing styles can be located at https://student.unsw.edu.au/referencing

In BABS2202 we would prefer you to use the Harvard Referencing System.

Academic integrity

Academic integrity is fundamental to success at university. Academic integrity can be defined as a commitment to six fundamental values in academic pursuits**:** honesty, trust, fairness, respect, responsibility and courage.[1] At UNSW, this means that your work must be your own, and others' ideas should be appropriately acknowledged. If you don't follow these rules, plagiarism may be detected in your work.

Plagiarism is the presentation of the thoughts or work of another as one's own. Examples [2] include:

- direct duplication of the thoughts or work of another, including by copying work, or knowingly permitting it to be copied. This includes copying material, ideas or concepts from a book, article, report or other written document (whether published or unpublished), composition, artwork, design, drawing, circuitry, computer program or software, web site, Internet, other electronic resource, or another person's assignment without appropriate acknowledgement;
- paraphrasing another person's work with very minor changes keeping the meaning, form and/or progression of ideas of the original;
- piecing together sections of the work of others into a new whole;
- presenting an assessment item as independent work when it has been produced in whole or part in collusion with other people, for example, another student or a tutor; and,
- claiming credit for a proportion a work contributed to a group assessment item that is greater than that actually contributed [3].

Further information about academic integrity and **plagiarism** can be located at:

- The *Current Students* site https://student.unsw.edu.au/plagiarism**,** and
- The *ELISE* training site http://subjectguides.library.unsw.edu.au/elise/presenting

The *Conduct and Integrity Unit* provides further resources to assist you to understand your conduct obligations as a student: https://student.unsw.edu.au/conduct.

[1] International Center for Academic Integrity, 'The Fundamental Values of Academic Integrity', T. Fishman (ed), Clemson University, 2013.
[2] Based on that proposed to the University of Newcastle by the St James Ethics Centre. Used with kind permission from the University of Newcastle.
[3] Adapted with kind permission from the University of Melbourne.

7. Readings and resources

Text Book

This course offers a text book to assist students' learning:

Cell and Molecular Biology, 7th edition, Wiley, 2013. Karp, G.

This is available from the UNSW bookshop and the UNSW library at open reserve/ high use collection.

Moodle and Teams

All students enrolled in courses offered at BABS automatically have access to the course Teams site and Moodle site https://moodle.telt.unsw.edu.au. This site will be used to distribute course notes and information and should be checked at regular intervals.

Research Resources

Literature Searching: http://www.ncbi.nlm.nih.gov/pubmed

UNSW Library: http://www.library.unsw.edu.au

8. Administrative matters

Biosciences Student Office
Student Advisor (BABS)
Email: BABStudent@unsw.edu.au
Tel: +61 (2) 9385 8047

Faculty Contact
Dr Gavin Edwards
Associate Dean (Academic Programs)
Email: g.edwards@unsw.edu.au
Tel: +61 (2) 9385 4652

Additional Websites

- Biosciences Student Office: https://www.babs.unsw.edu.au/contact/biosciences-student-office
- School of Biotechnology and Biomolecular Sciences website for current students: https://www.babs.unsw.edu.au/current-students/undergraduate-programs
- MyUNSW: https://my.unsw.edu.au/

9. Additional support for students

- UNSW Academic Calendar Key Dates: https://student.unsw.edu.au/dates
- UNSW Handbook: http://www.handbook.unsw.edu.au/2019/index.html
- UNSW Learning Centre: http://www.lc.unsw.edu.au/
- UNSW Student Equity and Disabilities Unit: https://student.unsw.edu.au/disability
- Counselling and Support: https://www.counselling.unsw.edu.au/
- University Health Service: http://www.healthservices.unsw.edu.au/
- The Hub: https://student.unsw.edu.au/hub
- UNSW Careers and Employment Service: http://www.careers.unsw.edu.au/
- ARC- Student Life: https://www.arc.unsw.edu.au/
- UNSW Student Life: https://www.unsw.edu.au/life