School of Biological Sciences

BIOL320: Molecular Cell Biology

Subject Outline
Autumn, 2016
On-Campus
Wollongong

Subject Information
Credit Points: 8
Pre-requisite(s): BIOL214 & BIOL215
Co-requisite(s): Nil
Restrictions: Nil
Contact Hours: 2 hrs Lectures, 4 hrs Tutorials/Practicals

Subject Contacts
Subject Coordinator/Lecturer
Name: Prof Marie Ranson
Location: Building 32, Room 307
Telephone: 61 2 4221 3291
Email: marie_ranson@uow.edu.au
Consultation mode and times: Email for appointment

Student Support and Advice
For general enquiries please contact the StudentHub 41:
Location: 41.138B
Telephone: 61 2 4221 3492
Email: smah-students@uow.edu.au
Student Consultation and Communication

University staff receive many emails each day. In order to enable them to respond to your emails appropriately and in a timely fashion, students are asked to observe basic requirements of professional communication.

Please ensure that you include your full name and student number and identify your practical class or tutorial group in your email so that staff know who they are communicating with and can follow-up personally where appropriate.

Consider what the communication is about
- Is your question addressed elsewhere (e.g. in the subject outline or, on the eLearning site)?
- Is it something that is better discussed in person or by telephone? This may be the case if your query requires a lengthy response or a dialogue in order to address. If so, see consultation times above and/or schedule an appointment.
- Are you addressing your request to the most appropriate person?

Specific email subject title to enable easy identification of issue
- Identify the subject code of the subject you are enquiring about (as staff may be involved in more than one subject) put this in the email subject heading. Add a brief, specific query reference after the subject code where appropriate.

Professional courtesy
- Address the staff member appropriately by name (and formal title if you do not yet know them).
- Use full words (avoid ‘text-speak’ abbreviations), correct grammar and correct spelling.
- Be respectful and courteous.
- Allow 3 – 4 working days for a response before following up. If the matter is legitimately urgent, you may wish to try telephoning the staff member (and leaving a voicemail message if necessary) or inquiring at the School Office.
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Section A: General Information

Subject Learning Outcomes
On completion of this subject, students should be able to:

1) Demonstrate an understanding of the fundamental importance of cellular structure and function to all life forms

2) Demonstrate a broad understanding of many specific aspects of cell biology, including cell and tissue structure, protein sorting mechanisms, secretion, membrane transport, energetics, signal transduction, apoptosis, the cytoskeleton, the cell cycle and cancer

3) Demonstrate proficiency in a range of cell biological techniques required for
   i) cell isolation and analysis
   ii) growth of various cell types in aseptic culture
   iii) observation and manipulation of cellular functions
   iv) the purification of cellular organelles

Subject Description
This subject covers many specific aspects of cell biology, including cell and tissue structure, protein sorting mechanisms, secretion, membrane transport, energetics, signal transduction, apoptosis, cellular and molecular genetics of development, the cell cycle and cancer. In addition, focused lab-based practicals are offered which will provide an understanding of the techniques used for studying cell biology. These include: cell and organelle isolation and analysis, growth of various cell types in aseptic culture, observation and manipulation of cellular functions and cell surface labelling and protein blotting.

eLearning Space
This subject has materials and activities available via eLearning. To access eLearning you must have a UOW user account name and password, and be enrolled in the subject. eLearning is accessed via SOLS (student online services). Log on to SOLS and then click on the eLearning link in the menu column. For information regarding the eLearning spaces please use the following link:
http://uowblogs.com/moodlelab/files/2013/05/Moodle_StudentGuide-1petpo7.pdf

Lecture, Tutorial, Laboratory Times
All timetable information is subject to variation. Check latest timetabling information on the 'Current Student' webpage on UOW website or log into SOLS to view your personal timetable prior to attending classes.

Timetable information can be accessed from

Key University Dates can be accessed from

Readings, References and Materials

Textbooks
The following text(s) will need to be purchased by students enrolled in this class.

Cell and Molecular Biology – Concepts and Experiments. 7th ed. Karp, G. Wiley
Prescribed Readings (includes eReadings)
The following texts are prescribed for this subject, but students are not expected to purchase these. They are available to students through the library on the subject's eLearning site.

Nil

Materials
UOW Approved Calculator
Laboratory Coat

Recommended Readings
The following references complement the prescribed readings and textbooks:


Recommended readings are not intended as an exhaustive list, students should use the Library catalogue and databases to locate additional resources.

Recent Changes to this Subject
i. Nil

Ethical Objection to the Use of Animal and Animal Products
In order to achieve specific learning objectives, the use of animals, animal tissues, and or animal-derived products (such as sera) is inherent and unavoidable. Students with conscientious objections to this use should not enrol in this subject.

Students who intend to avoid a particular learning activity on the basis of conscientious objection should notify the subject coordinator in writing as soon as possible and not later than the end of Week 1 of the session. Students who do not participate in a particular learning activity are required to complete an alternative exercise (a CD-ROM is available) or attend the practical and "observe". The material involved is examinable and the prac must be written up and completed in your workbook. For further information, refer to http://www.uow.edu.au/about/policy/UOW058708.html

Laboratory Safety Guidelines
The rules below are general rules that are required in laboratories.

- Before commencing your project you are to ensure that you understand specific procedures for the laboratory in which you work.
- You will need to fill out a risk assessment form before commencing any experiments (confer with your supervisor).
- Never use any equipment or attempt any experiment without checking the safety implications with your supervisor or experienced delegated laboratory worker.
- Undergraduate students are not permitted to work after hours unless there is appropriate approval and supervision.
List of Topics Covered

Cells and their Environment
Cell Membranes
Secretion and Endocytosis
Protein sorting mechanisms
Macromolecular traffic
Intracellular protein quality control
Mitochondria and Neurons
Stem Cells
Signal Transduction
Apoptosis
The Cytoskeleton and Cell Motility
The Cell Cycle
Cancer

A Timetable of Topics will be available from the eLearning site in week 1 of session.
Section B: Assessment

Assessment Summary

<table>
<thead>
<tr>
<th>Assessment Item</th>
<th>Form of Assessment</th>
<th>Due Date</th>
<th>Return/Feedback Due date</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment 1</td>
<td>Mid-session quiz</td>
<td>TBD</td>
<td>Within 21 days of due date</td>
<td>5%</td>
</tr>
<tr>
<td>Assessment 2</td>
<td>Student Lab Book 1</td>
<td>TBD</td>
<td></td>
<td>10%</td>
</tr>
<tr>
<td>Assessment 3</td>
<td>Scientific Report</td>
<td>TBD</td>
<td></td>
<td>15%</td>
</tr>
<tr>
<td>Assessment 4</td>
<td>Student Lab Book 2</td>
<td>TBD</td>
<td></td>
<td>10%</td>
</tr>
<tr>
<td>Assessment 5</td>
<td>Practical Exam</td>
<td>TBD</td>
<td></td>
<td>20%</td>
</tr>
<tr>
<td>Assessment 6</td>
<td>Final Theory Exam</td>
<td>During Exam Period</td>
<td>Release of results</td>
<td>40%</td>
</tr>
<tr>
<td><strong>Total Marks</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Details of Assessment Tasks

Assessment tasks will be marked using explicit criteria that will be provided to students prior to submission.

Assessment 1

<table>
<thead>
<tr>
<th>Due date</th>
<th>Weighting</th>
<th>Submission</th>
<th>Type of Collaboration</th>
<th>Length</th>
<th>Details</th>
<th>Style and format</th>
<th>Subject Learning Outcomes</th>
<th>Marking Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBD</td>
<td>5%</td>
<td>Exam papers and answers must be submitted at the conclusion of the exam.</td>
<td>Individual Assessment</td>
<td>1 hour</td>
<td>1 hr quiz. Short answer questions based on the first six weeks of lectures.</td>
<td>Exam - short answer questions</td>
<td>1, 2</td>
<td>The marking criteria will be made available on your eLearning site by week 1 of session.</td>
</tr>
</tbody>
</table>

Assessment 2

<table>
<thead>
<tr>
<th>Due date</th>
<th>Weighting</th>
<th>Submission</th>
<th>Type of Collaboration</th>
<th>Length</th>
<th>Details</th>
<th>Style and format</th>
<th>Subject Learning Outcomes</th>
<th>Marking Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBD</td>
<td>10%</td>
<td>Submit a hardcopy of your assessment to the Technical Officer in Bldg 43</td>
<td>Individual Assessment</td>
<td>See details below</td>
<td>Based on all practicals from the first few weeks. Details of which practical results to be included on this assessment will be made available on your eLearning site by week 1 of session</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Details

The Subject Manual contains background information and instructions for all practical classes, together with tables to be completed and questions to be answered. Results from practicals must be recorded in a small dedicated exercise book ("Laboratory Notebook") for assessment.

Prior to ALL practical classes students should read the manual and complete a flow diagram in their laboratory notebooks that clearly demonstrates the steps in the experiment(s) to be used in the practical class that day.

This flow diagram will be checked and marked by demonstrators at the start of each practical and marks will be deducted from the overall laboratory notebook mark if it is not completed.

Students are required to complete the relevant tables and answer questions posed for all practicals. This may be done initially in the subject manual.
itself during the practical class; however, these tables and answers must then be copied NEATLY into the laboratory notebook.

<table>
<thead>
<tr>
<th>Style and format</th>
<th>Laboratory notebook</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject Learning Outcomes</td>
<td>3</td>
</tr>
<tr>
<td>Marking Criteria</td>
<td>The marking criteria will be made available on your eLearning site by week 1 of session.</td>
</tr>
</tbody>
</table>

### Assessment 3

<table>
<thead>
<tr>
<th>Scientific Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>Due date</td>
</tr>
<tr>
<td>Weighting</td>
</tr>
<tr>
<td>Submission</td>
</tr>
<tr>
<td>Type of Collaboration</td>
</tr>
<tr>
<td>Length</td>
</tr>
<tr>
<td>Details</td>
</tr>
<tr>
<td>Style and format</td>
</tr>
<tr>
<td>Subject Learning Outcomes</td>
</tr>
<tr>
<td>Marking Criteria</td>
</tr>
</tbody>
</table>

### Assessment 4

<table>
<thead>
<tr>
<th>Student Lab Book 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Due date</td>
</tr>
<tr>
<td>Weighting</td>
</tr>
<tr>
<td>Submission</td>
</tr>
<tr>
<td>Type of Collaboration</td>
</tr>
<tr>
<td>Length</td>
</tr>
<tr>
<td>Details</td>
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<td></td>
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<td></td>
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<tr>
<td></td>
</tr>
</tbody>
</table>
itself during the practical class; however, these tables and answers must then be copied NEATLY into the laboratory notebook.

<table>
<thead>
<tr>
<th>Style and format</th>
<th>Laboratory notebook</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject Learning Outcomes</td>
<td>3</td>
</tr>
<tr>
<td>Marking Criteria</td>
<td>The marking criteria will be made available on your eLearning site by week 1 of session.</td>
</tr>
</tbody>
</table>

#### Assessment 5

<table>
<thead>
<tr>
<th>Due date</th>
<th>Practical Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weighting</td>
<td>20%</td>
</tr>
<tr>
<td>Submission</td>
<td>Exam papers and answers must be submitted at the conclusion of the exam.</td>
</tr>
<tr>
<td>Type of Collaboration</td>
<td>Individual Assessment</td>
</tr>
<tr>
<td>Length</td>
<td>2 hours</td>
</tr>
<tr>
<td>Details</td>
<td>2 hr exam. Multipart short answer questions that may include theory, graphing and/or calculations associated with any of the practicals performed.</td>
</tr>
<tr>
<td>Style and format</td>
<td>Exam - short answer questions</td>
</tr>
<tr>
<td>Subject Learning Outcomes</td>
<td>1-3</td>
</tr>
<tr>
<td>Marking Criteria</td>
<td>The marking criteria will be made available on your eLearning site by week 1 of session.</td>
</tr>
</tbody>
</table>

#### Assessment 6

<table>
<thead>
<tr>
<th>Due date</th>
<th>Final Theory Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weighting</td>
<td>40%</td>
</tr>
<tr>
<td>Submission</td>
<td>Exam papers and answers must be submitted at the conclusion of the exam.</td>
</tr>
<tr>
<td>Type of Collaboration</td>
<td>Individual Assessment</td>
</tr>
<tr>
<td>Length</td>
<td>3 hours</td>
</tr>
<tr>
<td>Details</td>
<td>3 hr exam including short answer and essay questions</td>
</tr>
<tr>
<td>Style and format</td>
<td>Exam - short answer questions and essay questions</td>
</tr>
<tr>
<td>Subject Learning Outcomes</td>
<td>1, 2</td>
</tr>
<tr>
<td>Marking Criteria</td>
<td>The marking criteria will be made available on your eLearning site by week 1 of session.</td>
</tr>
</tbody>
</table>

**Minimum Requirements for a Pass in this Subject**

To receive a clear pass in this subject a total mark of 50% or more must be achieved. In addition, failure to meet any of the minimum performance requirements is grounds for awarding a Technical Fail (TF) in the subject, even where total marks accumulated are greater than 50%.

The minimum performance requirements for this subject are:

- Obtain a grade of 45% or higher in the final exam

**Minimum Student Attendance and Participation**

It is expected that students will allocate 16 hours per week to this subject, including any required class attendance, completion of prescribed readings and assessment tasks.

Student attendance at tutorials, practicals, seminars and/or simulations is compulsory and students must attend at least 100% of classes. Absences will require the submission of an application for Academic Consideration via SOLS and the presentation of suitable documentation, for example a Medical Certificate, to Student Central as soon as practical. For further details about applying for academic consideration visit the Student Central webpage: [http://www.uow.edu.au/student/central/academicconsideration/index.html](http://www.uow.edu.au/student/central/academicconsideration/index.html)
Scaling
Scaling may occur in this subject at the end of session by the Unit Assessment Committee and/or Faculty Assessment Committee (FAC). Marks will only be scaled to ensure fairness/parity of marking across groups of students. Scaling will not affect any individual student’s rank order within their cohort. For more information refer to Assessment Guidelines – Scaling: http://www.uow.edu.au/about/policy/UOW058609.html

Late Submission
Late submission of an assessment task without an approved extension of the deadline is not acceptable. If you are unable to submit an assessment due to extenuating circumstances (e.g. medical grounds or compassionate grounds), you can make an application of academic consideration. Not all circumstances qualify for academic consideration. For further details about applying for academic consideration visit the Student Central webpage: http://www.uow.edu.au/student/central/academicconsideration/index.html

Late Submission Penalty
Late submission of an assessment task without an approved extension of the deadline is not acceptable. Marks will be deducted for late submission at the rate of 10% of the total possible marks for that particular assessment task per day. This means that if a piece of work is marked out of 100, then the late penalty will be 10 marks per day (10% of 100 possible marks per day). The formula for calculating the late penalty is the total possible marks x 0.10 x number of days late. For the purposes of this policy a weekend (Saturday and Sunday) will be regarded as two days.

No marks will be awarded for work submitted after the assessment has been returned to the students.

Supplementary Assessments
Supplementary assessment may be offered to students whose performance in this subject is close to that required to pass the subject, and are otherwise identified as meriting an offer of a supplementary assessment. The precise form of supplementary assessment will be determined at the time the offer of a supplementary assessment is made.

Students can log on to SOLS and click on the link titled “Supplementary Assessment” to view any applicable offers. Addition information on supplementary assessments is available at: http://www.uow.edu.au/student/exams/suppassess/index.html

System of Referencing Used for Written Work
The Author-Date (Harvard) referencing system should, unless otherwise specified for a particular assessment (check Details of Assessment Tasks), be utilised. A summary of the Harvard system can be accessed on the Library website at: http://public01.library.uow.edu.au/refcite/style-guides/html/

Use of Internet Sources
Students are able to use the Internet to access the most current information on relevant topics and information. Internet sources should only be used after careful critical analysis of the currency of the information, the role and standing of the sponsoring institution, reputation and credentials of the author, the clarity of the information and the extent to which the information can be supported or ratified by other authoritative sources.
Plagiarism
The full policy on Academic Integrity and Plagiarism is found in the Policy Directory on the UOW website.

“The University’s Academic Integrity and Plagiarism Policy, Faculty Handbooks and subject guides clearly set out the University’s expectation that students submit only their own original work for assessment and avoid plagiarising the work of others or cheating. Re-using any of your own work (either in part or in full) which you have submitted previously for assessment is not permitted without appropriate acknowledgement. Plagiarism can be detected and has led to students being expelled from the University.

The use by students of any website that provides access to essays or other assessment items (sometimes marketed as ‘resources’), is extremely unwise. Students who provide an assessment item (or provide access to an assessment item) to others, either directly or indirectly (for example by uploading an assessment item to a website) are considered by the university to be intentionally or recklessly helping other students to cheat. This is considered academic misconduct and students place themselves at risk of being expelled from the University.”

Submission of Assessments
Refer to the submission requirements under the details of the individual assessments. Students should ensure that they receive a receipt/evidence acknowledging assessment submission. Students will be required to produce this in the event that an assessment task is considered to be lost. Students are also expected to keep a copy of all their submitted assignments in the event that re-submission is required.

Assessment Return
Students will be notified when they are able to view their marked assessment. In accordance with University Policy marked assignments will usually only be held for 21 days after the declaration of marks for that assignment.
Section C: General Advice

Students should refer to the Faculty of Science, Medicine and Health website for information on policies, learning and support services and other general advice.

University Policies

Students should be familiar with the following University policies:

a. Code of Practice – Teaching and Assessment

b. Student Charter

c. Academic Integrity and Plagiarism Policy

d. Student Academic Consideration Policy

e. Course Progress Policy

f. Graduate Qualities Policy

g. Academic Grievance Policy (Coursework and Honours Students)

h. Policy and Guidelines on Non-Discriminatory Language Practice and Presentation

i. Workplace Health and Safety, where relevant

j. Intellectual Property Policy

k. Student Conduct Rules and accompanying Procedures or Research Misconduct Policy for research students

Student Support Services and Facilities

Students can access information on student support services and facilities at the following link. This includes information on “Academic Support”, “Starting at University,” “Help at University” as well as information and support on “Career’s and Jobs”. [http://www.uow.edu.au/student/services/index.html]

Student Etiquette

Guidelines on the use of email to contact teaching staff, mobile phone use in class and information on the university guide to eLearning ‘Netiquette’ can be found at [http://www.uow.edu.au/student/elearning/netiquette/index.html]

Version Control Table

<table>
<thead>
<tr>
<th>Version Control</th>
<th>Release Date</th>
<th>Author/Reviewer</th>
<th>Approved By</th>
<th>Amendment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20160120</td>
<td>Prof Marie Ranson – Subject Coordinator</td>
<td>Sonia Losinno – ADE nominee</td>
<td>FINAL BIOL320 Aut 2016 Subject Outline</td>
</tr>
</tbody>
</table>