



THE AUSTRALIAN NATIONAL UNIVERSITY

RESEARCH SCHOOL OF BIOLOGY

**ANU COLLEGE OF MEDICINE, BIOLOGY AND
ENVIRONMENT**

BIOCHEMISTRY AND MOLECULAR BIOLOGY

HONOURS PROGRAM - 2010

Information for students and supervisors

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Honours Coordinators

INTRODUCTION

In the Honours Year, our aim is to encourage you to develop a real enthusiasm for, and appreciation of, scientific discovery. The year's activities promote development of skills in laboratory technique, research planning, inductive reasoning, literature searching, storage and retrieval, and written and oral communication. They will also advance your knowledge and understanding of contemporary biology.

During the year, you will learn much about your academic and personal strengths and weaknesses. For most students the year will be fruitful and enjoyable, and the research projects will be challenging, stimulating and satisfying. You will be part of a research group and a valued member of a scientific community. This is also a year of decision-making and you will be advised about future professional activities and career directions.

SUPERVISION

Your supervisor will be your principal mentor and academic adviser, although you are encouraged to consult others both inside and outside your group. Ideally, the relationship between supervisor and student is one of mutual respect and trust, and is friendly and constructive. You should have frequent and regular contact with your supervisor, although supervisors vary in the amount of time that they have available and students also vary in their needs. In particular, your supervisor will:

- play a critical role in development and implementation of your research project together with the technical skills needed;
- help you prepare your literature review and comment on it;
- comment critically on all written work submitted for assessment during the year, including the News and Views article and the thesis; and
- assist you to prepare for all oral presentations during the year, including both seminars and the journal club, and provide feedback on your performance.

Please bear in mind that supervisors have many other duties and may not be able to respond immediately to a request from you. Give your supervisor reasonable time to respond and also try and develop a level of self-reliance so that you gradually increase your independence from your supervisor. Try to develop what we call "ownership of the project".

If you have more than one supervisor, both supervisors may read and provide feedback on a draft of your research proposition and thesis; however, **the two supervisors should read and comment upon identical drafts; you may not submit one draft to one and a second to the other.**

THE RESEARCH PROJECT

The Research Project is an experimental study carried out in the supervisor's laboratory over a nine month period and is written up and presented as a thesis. It is the major activity of the year. During the year you will also write a project outline, a progress report and give two seminars on your project. These are not assessed.

Examiners You will have two examiners, who will be appointed in mid-February. Your examiners will not necessarily be in your research area and you should consider this when preparing for meetings and writing your thesis. Although seminars are not formally assessed, it is expected that your examiners will attend both your seminars. You and your supervisor will meet with your examiners three times during the year; for an introductory meeting, a mid year progress meeting and for a final thesis discussion. Only the latter contributes to your final assessment.

Project Outline You should prepare a 2-3 page outline of a primary and a second ("safety net") project, written by you after discussion with your supervisor. This outline should be given to your two examiners at the Introductory Seminar. The second project is a back-up in case the primary project breaks down or otherwise proves to be unsatisfactory; it might have different hypotheses, methods or experimental requirements. In the week following the seminars, your supervisor should

arrange a meeting with your examiners in which they can provide feedback and ask questions about your research project.

Research Progress Report With the help of your supervisor, you should write a 3-4 page document detailing your project, and the progress you have achieved. This should be sent to your examiners by the 8th of June and a feedback meeting will be held soon afterwards. As part of this meeting, your examiners will talk with you and your supervisor separately to ascertain that each of you is happy with your progress. Your supervisor will arrange this meeting. Your examiners will provide feedback on the progress of your project but should not be seen as part-time supervisors or advisers

Seminars You will present two research-related seminars during the year. The **Introductory Seminar**, given on February 22-26, is a brief survey of the literature and an outline of the proposed project, including the hypotheses being tested and the experimental strategies to be employed. The **Final Seminar**, on September 21-25, is an account of what you have achieved during the year and provides an opportunity for you to receive feedback before your thesis is submitted. *Seminars last 15 min followed by 5 min for questions.* Your supervisor will provide feedback on your performance in the initial seminar – content, organisation, presentation, style, etc. Supervisors must attend the presentations given by their students; in the event of an emergency the supervisor must arrange for another staff member to provide feedback.

The Literature Review You should submit a review of the literature relevant to your project to your supervisor(s) on or before March 29. It is commonly about 10 pages long and will form the basis for the first chapter of your thesis, although it will almost certainly need extensive re-writing later in the year. Your supervisor(s) will read and comment on it. This is a useful opportunity for you and your supervisor to discuss your writing style and help you to improve.

The Thesis The thesis should be written so that it can be understood by a molecular biologist/biochemist, not for a specialist in your research area. A workshop will be held in August at which you will be given detailed information on the format of the thesis and advice about its preparation.

You should submit your thesis to the School Administrator on or before 3 pm, Friday October 29. 1-2 weeks later you will be asked to attend a **discussion** (no more than one hour and a half long) of your project with your examiners to assist them in their assessment. Your supervisor(s) will attend but may not participate in the discussion unless invited. After the discussion, the examiners will talk separately with you and your supervisors. During this time your supervisor(s) will give an assessment of your performance through the year, including mention of any problems, either project related or personal, that might have affected your performance during the year. The examiners will then give a 1 page report on your performance, together with an agreed mark, to the Honours Coordinator before the examiners' meeting on November 18, at which the final grades will be decided. The criteria used for the examiners' and the supervisor's assessment are included below.

NEWS AND VIEWS ARTICLE

This exercise is designed to develop the skills in critical analysis and communication. You will be asked to choose a high impact and significant original article and write a short summary of the article, explaining why it is significant. Your summary should be aimed at the general reader and will be assessed by examiners who are not necessarily experts in the area of your article. In early March, you will be given some guidelines and an introduction to this exercise. You will be assessed on your choice of article and on how well you have explained a specialized subject to the general reader. The News and Views article should be no more than 1000 words long (not including legends to figures and tables or the bibliography). It should be submitted to the School Administrator on or before May 5.

Each article will be read by three examiners who will not know the identity of the student being examined. Written feedback will be provided.

JOURNAL CLUB PRESENTATION

During May/June/July you are required to prepare and give a Journal Club presentation to your laboratory group. The talk, of about 30 min, should comprise a presentation and critical assessment of a recently-published experimental paper on a topical subject in science. The topic or paper chosen should be one that will generate discussion among the group. The Journal Club is not assessed but it is a course requirement. Your supervisor should notify the Honours Coordinator when you have successfully completed your Journal Club presentation.

SEMINAR ATTENDANCE

It is expected that you will attend seminars regularly during the year. It is a course requirement that you attend at least 10 seminars during the year. BaMBi school seminars, JCSMR or RSBS seminars, or any other equivalent seminars are acceptable. You will need to keep a log book which you will take to the seminars. In it, you should record the name of the speaker, the date and the venue. You will either need to take notes during the seminar, or to write a paragraph summarizing the talk at the end of the seminar (these should be hand written, there is no need to have them typed). Your supervisor (or if unavailable, an other member of academic staff) should sign and date each entry, as a confirmation that you have attended. The log book must be handed in to the BaMBi administrator on or before the thesis due date.

OTHER COMPONENTS of the course include compulsory workshops on Biological and Chemical safety, working with radioisotopes (for those whose project requires it), preparation of seminars, ethics of animal use, reference management and statistics. Participation in your research group's regular 'lab-chats' is expected. Regular attendance of seminars in your local area is also expected (see "seminar attendance" above).

ASSESSMENT

In 2009 your work during the Honours year be assessed as follows:

Research Project and Thesis	
Examiners' mark (combined)*	75%
Research Assessment Mark (by supervisor)	5%
News and Views	20%
Literature survey	CRS (Course Requirement Satisfied)
Seminar log book	CRS
Journal Club	CRS

*Research assessment marks should be justified to the examiners at the end of the thesis discussion.

EXTENSIONS AND PENALTIES FOR LATE SUBMISSION

You must hand in your News and Views article and thesis by the due dates and times specified (see Timetable); after 10 days the item will not be accepted. For the News and Views article, a penalty of 2% per day late of the maximum possible marks will be deducted. For the thesis, the penalties outlined in the Colleges of Science Submission Guidelines (next page) will be applied.

All course requirements must also be satisfied by the thesis due date. Failure to do so will incur a reduction of the thesis mark by 2% (of total possible marks) per day until all course requirements are satisfied.

Extensions will only be given when the reasons for late submission are clearly beyond your control and make it unreasonable for the item to be submitted on time and when the conditions outlined in the Colleges of Science Submission Guidelines (next page) have been met. Such reasons may include prolonged illness (a medical certificate is required) or prolonged malfunction of essential equipment; minor delays or short illnesses are not considered adequate reasons for an extension unless they happen very close to the submission date. **We do *not* accept failure to back up computer files adequately as a valid reason for an extension.** If you have an extension, normal late submission penalties will apply if you do not submit by the approved revised date.

Requests for extension must be submitted to the honours convenor in writing, together with any medical or other evidence that supports the special circumstances on which the request is based. Your request must be endorsed by your supervisor.

PLAGIARISM

Plagiarism (i.e. copying published work and passing it as your own) is a form of theft and is unacceptable. *Students committing this offence will be heavily penalised (receive no more than a pass, 50%, for the item under consideration).* Include full bibliographies with all written work. The BaMBi plagiarism policy is given in Appendix 1.

AVENUES OF COMMUNICATION

For work-related problems: It is important that any work-related problems are resolved as soon as they arise. The first port of call for discussion of such problems is your supervisor(s). If further discussion is required, you should contact one of the Honours Coordinators.

Submission Guidelines for Honours Students

Your honours year will be an intense learning experience. The following guidelines have been developed for the sake of equity, to attempt to reduce stress on you and to model the professional practice that you are now part of as a research student.

- All theses must be submitted by 3pm on Friday 30th October 2009 to the Colleges of Science first floor office in the Frank Fenner Building (Building 42) – an electronic copy must be submitted to the Department/School Honours convenor.
- If you miss the Friday deadline your next opportunity to submit is Monday 2nd November 2009. Any theses submitted by 3 pm on this day will be penalised 2% of the assigned mark for the thesis and a further 2% per day late thereafter. A submission on Tuesday will be penalised 4%, Wednesday 6%, etc.
- Extensions will only be granted in exceptional circumstances where students can document unforeseeable circumstances that have impacted on their ability to submit on time.
- No applications for extensions for unforeseeable circumstances occurring prior to the due date will be accepted on the due date.
- Extensions will only be granted if all the milestones noted below have been met.

Milestones to be completed:

1. Proposal seminar/research plan.
2. Mid course seminar/progress report.
3. A month before submission both the student and supervisor to sign off on the scope of all major data collection/field work/experiments/calculations that are required for submission.
4. **Two** weeks before submission both the student and supervisor to sign off that a first draft of the thesis has been submitted to the supervisor and has been returned by the supervisor with comments

BIOCHEMISTRY AND MOLECULAR BIOLOGY HONOURS PROGRAM

GENERAL CRITERIA FOR ASSESSMENT BY EXAMINERS:

Honours I >90%: Should fulfil *most* of the following criteria:

- have an excellent and extensive knowledge and understanding of the relevant background literature and have integrated different sources of information;
- have made a critical analysis of the background literature;
- have consistently demonstrated an ability to apply relevant knowledge to the problem under investigation, as evidenced by experimental design and interpretation and discussion of results;
- have presented results clearly, succinctly and in an appropriate format;
- have used the correct statistical analysis and have a thorough understanding of why that particular analysis was appropriate;
- have shown an exceptional appreciation of the limitations of the experimental design, the techniques used, and the results obtained;
- have used their results to generate hypotheses;
- have outlined future experiments which are feasible and which range from the obvious to the imaginative to test these hypotheses and to extend the study;
- * have used a clear, fluent writing style, with good syntax and exceptionally few spelling errors;

Overall, the student should have shown mastery of the topic, including outstanding integration of their results with the existing literature and a deep understanding of the techniques used for the research. Students falling in this category would be in the top 1-5% of Honours students.

Honours I 80-89%: Should fulfil *most* of the following criteria:

- have excellent knowledge and understanding of the relevant background literature and have integrated different sources of information;
- have made a critical analysis of the background literature;
- have consistently demonstrated an ability to apply relevant knowledge to the problem under investigation, as evidenced by experimental design and interpretation and discussion of results;
- have presented results clearly, succinctly and in an appropriate format;
- have used the correct statistical analysis but have a limited understanding of why that particular analysis was appropriate;
- have shown a significant appreciation of the limitations of the experimental design or techniques used;
- have used their results to generate hypotheses;
- have outlined future experiments to test these hypotheses and to extend the study;
- * have used a clear, fluent writing style, with good syntax and few spelling errors;

Overall, the student should have shown in-depth knowledge of the topic, including appropriate integration of their results with the existing literature and a good understanding of the techniques used for the research. Students falling in this category are excellent students and their work is very high quality but it falls just short of outstanding.

Honours IIA 70-79%: Should fulfil *most* of the following criteria:

- have a good grasp of the relevant background literature but some limitations in their understanding of it;
- have summarised rather than critically analysed the background literature;
- have demonstrated some ability to apply relevant knowledge to the problem under investigation as evidenced by interpretation and discussion of results;
- have presented results clearly and in the appropriate format but a few errors may be apparent;

- have used correct statistical analysis, with possibly a poor understanding of why it is appropriate;
- have shown an appreciation of the limitations of the experimental design or techniques used;
- have outlined future experiments which are obvious;
- * have used a clear, fluent writing style, with some grammatical and/or spelling errors.

Overall, the student should have shown command of the topic but their work fails to reach Honours I standard because of a less thoughtful and less rigorous presentation and a more limited understanding.

Honours IIB 60-69%: Should fulfil *most* of the following criteria:

- have knowledge of the relevant background literature and have only summarised it;
- have demonstrated limited ability to apply that knowledge to the problem under investigation as evidenced by failure to interpret and discuss results adequately;
- have presented data without adequate care or used an inappropriate format;
- have used statistical analysis which is inappropriate or not understood;
- have shown minimal appreciation of the limitations of the experimental design or techniques used;
- have outlined future experiments but some may be inappropriate or not feasible;
- * have used a satisfactory writing style, with but grammatical and/or spelling errors.

Overall, the student should have addressed the topic satisfactorily but their knowledge and understanding is limited and the quality of the presentation leaves much room for improvement.

Honours III 50-59%: Should fulfil *most* of the following criteria:

- have summarised the relevant background literature but with significant omissions or errors in interpretation;
- have not applied relevant knowledge to the problem under investigation as evidenced by inadequate interpretation of results and failure to reference the relevant literature in the discussion of the results;
- have not fully presented their results or presented them sloppily and incorrectly;
- have not undertaken statistical analysis where it would have been appropriate to do so;
- have shown minimal appreciation of the limitations of the experimental design or techniques used;
- have outlined future experiments which are inappropriate or not feasible;
- * thesis is readable but poorly organised and spoiled by grammatical and/or spelling errors.

Overall, the student should have presented a thesis which is barely satisfactory.

* For students from non-English speaking backgrounds the level of error should be such that it does not interfere with understanding of the content.

Grades will be based on *performance* during the Honours year, not on *potential*.

HONOURS TIMETABLE 2010 - DRAFT				
Date/Time		Venue	Activity	
Mon 1 Feb	10:00 - 11.30	BaMBi Seminar Room	Welcome Introduction to the year Photos of all students	Kieran Kirk Honours Convenors
Wed 3 Feb:	9.00 – 10.00	BaMBi Tea Room	Welcome breakfast for students and supervisors	
	10.00 –10.30	BaMBi Seminar Room	How to give a seminar	Honours Convenors
Thur 4 Feb	10.00 - 1.00	BaMBi Seminar Room	Introduction to statistics	Stefan Broer
Fri 5 Feb	10.00 - 11.00	BaMBi Seminar Room	Animal Ethics	Simon Bain
Mon 8 Feb	11:00-12:00	BaMBi Seminar Room	Meeting of all external supervisors	Honours Convenors
Mon 8 Feb	10:00-1:00 OR 2:00-5:00	Hugh Ennor Building	Animal training (if project involves rodents)	Hamish McMath
February			Must complete online courses: -OGTR (all students) -Animal Ethics Mod 1&2 (if working with animals)	
Mon Feb 22			Project outline due. (Meeting with examiners to be organised)	To Examiners and to Supervisor
Feb 22-26 Afternoons		BaMBi Seminar Room	Introductory Seminars	
February		Lecture Theatre, Innovations Building	Chemical Safety Course	OHS Unit
Early March			Meeting with examiners	
March		Hancock Library Flexible Learning Studio	Introduction to Endnote	Lisa Bradley
March		Lecture Theatre, Innovations Building	Biological Safety Course	OHS unit
Wed 24 March	10.00-11.00	BaMBi Seminar Room	News and views introduction	Honours Convenors
Mon 29 March		-	Literature Review Due	to Supervisor
Thurs April 22	10:00-12:00	BaMBi Seminar Room	News and Views workshop	Paul Preston, Academic skills centre
Wed 5 May, 4.00 p.m.		Enquiries Office	News and Views Due	BaMBi Administrator
May		Lecture Theatre, Innovations Building	Ionizing Radiation Safety (if likely to work with radioactive materials)	OHS unit
May/June/July			Journal Club	
Tues 8 June			Research Progress Report due. (Meeting with examiners to be organised)	To Examiners and to Supervisor
June			Meeting with examiners	Supervisor and Examiners
August		BaMBi Seminar Room	Thesis Evaluation Workshop	Paul Preston, Academic skills centre
Sept 21-25	Afternoons	BaMBi Seminar Room	Final Seminars	
October			Seminar Log book due	BaMBi Administrator
Fri 1 October			Student and supervisor sign off on completion of	To honours convenor

		experimental work	
Fri, 15 October		Student and supervisor sign off that draft thesis is complete	To honours convenor
Friday, 29 October: 3.00 p.m.		Final Thesis Due	College of Sciences office, honours convenor
Thu, 4 November: 1.00 p.m.		Final BBQ	All Students and Staff
Mon - Fri 8-12 November		Thesis Discussions with Examiners	
Thu, 18 November: 2.00 p.m.	BaMBi Seminar Room	Examiners Meeting	All Examiners and Supervisors

DRAFT

APPENDIX 1: BaMBi POLICY ON THE SUBMISSION OF WRITTEN MATERIAL –

This policy reflects the ANU Code of Practice for Student Academic Honesty:

<http://science.anu.edu.au/UnderGraduate/RulesAndPoliciesUndergrad/index.php>

It is the **responsibility of each individual student** to ensure:

- Work submitted for assessment is genuine and original;
- Appropriate acknowledgement and citation is given to the work of others;
- He/she does not knowingly assist other students in academically dishonest practices;
- Familiarity with the expectations for academic honesty both in general, and in the specific context of particular disciplines or courses, where these expectations are clearly outlined in faculty and course guides and handbooks.

For BaMBi students definitions and penalties, which align with the Code, are set out below.

Plagiarism

Plagiarism is copying, paraphrasing or summarising, without acknowledgement, any work of another person with the intention of representing this as the student's own work. This remains plagiarism whether or not it is with the knowledge or consent of that other person.

Direct copying falls under the definition of plagiarism. When students work together, they must be sure to write their assignments independently and not in collaboration with another student or group of students. The purpose of assessment is to evaluate each student's mastery of skills and knowledge. It is acceptable for students to compare and discuss results of experiments or essay concepts, but written work must reflect individual effort and all written work must be the student's own.

Plagiarism has also taken place when direct use of others' words is not indicated, for example by inverted commas or indentation, in addition to appropriate citation of the source.

To avoid plagiarism students must properly acknowledge the work of others. If students transcribe, quote, paraphrase or summarise the ideas obtained from the works of others, they must properly identify the source and author of the original work and provide full bibliographies.

Penalty: **zero marks**. Serious and in particular repeated instances of academic dishonesty constitute misconduct and need to be dealt with under the ANU's Discipline Rules.

Multiple Submissions (Recycling)

Recycling is the submission of work for assessment, which has been previously presented by the same student for another assessment either at the Australian National University or elsewhere. In some cases, lecturers will specifically allow this practice. If no specific provision is made then it constitutes academic dishonesty when assessment is submitted a second or subsequent time.

Penalty: **zero marks**. Serious and in particular repeated instances of academic dishonesty constitute misconduct and need to be dealt with under the ANU's Discipline Rules.

Fabrication or Falsification of Data

Fabrication of research is the representation of data, observation or other research activity as genuine, comprehensive and/or original when it has in fact been arrived at through other means. These may be simply inventing the data, using data gathered by other researchers without acknowledgment, or wilfully omitting data to obtain apparently desired results.

Any data presented as the result of lab work (whether in the form of drawings, graphs, tables or written work) must be true and representative of your findings.

Penalty: **zero marks**. Serious and in particular repeated instances of academic dishonesty constitute misconduct and need to be dealt with under the ANU's Discipline Rules.

Collusion

Collusion is the representation of original work of several persons as the work of a single student. "Collusion" needs to be distinguished from "collaboration", defined for the purposes of this document as work jointly undertaken and produced within permissible parameters. Another form of collusion involves representing the work of one good student as the work of several individual students, in for example the situation where students A, B and C pay D to do the assignment and give them copies, which they then rephrase and submit as their own.

Penalty: **zero marks**. Serious and in particular repeated instances of academic dishonesty constitute misconduct and need to be dealt with under the ANU's Discipline Rules.

Cheating

Cheating in this code means the breach of rules regarding formal examinations, or dishonest practice in informal examinations, tests or other assessments. Examples include the use of prohibited material or equipment for unfair advantage, consultation with other persons during the course of the assessment where this is prohibited.

Penalty: **zero marks**. Serious and in particular repeated instances of academic dishonesty constitute misconduct and need to be dealt with under the ANU's Discipline Rules.