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# BMS4100 & BMS 4200

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## Bachelor of Biomedical Science Honours

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### Course Outline

A full-time Bachelor of Biomedical Science Honours year gives students the opportunity to undertake a specific avenue of research selected from the range of research interests in any area of biomedical science. The course is also designed to prepare selected students for postgraduate research work leading to Master of Science or Doctor of Philosophy degrees. The course is divided into two separate units. BMS4100 comprises the research component of the course and is a 36 point unit. BMS4200 comprises the advanced discipline specific and common core components and is a 12 point unit.

### BMS4100 - Biomedical science research project unit synopsis

Students undertake a supervised research project involving research of a publishable standard which forms the basis of a thesis presented at the end of the year. As part of the unit students present seminars on their research, and are trained in advanced scientific techniques. Students take part in an oral review of the thesis report. Candidates may commence the Honours year at the beginning of either the first or second semester.

### BMS4200 - Advanced studies in biomedical science unit synopsis

The unit aims to develop analytical abilities and communication skills, as well as provide students with advanced knowledge in specific areas of Biomedical Science. Students will undertake a module of statistics relevant to scientific hypothesis testing and provide a written critique of a scientific article. Students will also undertake a component of work within their selected discipline that is unrelated to their specific research component and involves some level of advanced theoretical training. Candidates may commence at the beginning of either first or second semester.

<b>Mode of Delivery</b>	<b>On campus</b>
<b>Unit Relationships</b>	<a href="#">BMS4100</a> and BMS4200 must be enrolled in the Honours Degree of Bachelor of Biomedical Science
<b>Prerequisites</b>	A distinction level average in 24 points at third year level, including at least 12 points in 3rd year BMS units
<b>Chief Examiner</b>	<i>A/Prof Tim Cole</i>
<b>Unit Coordinator:</b>	Dr Shae-Lee Cox
<b>Campus:</b>	Clayton
<b>Phone:</b>	99029118 (Tim Cole) 9902418 (Shae Cox)
<b>Email:</b>	<a href="mailto:Tim.cole@monash.edu">Tim.cole@monash.edu</a> , <a href="mailto:shae.cox@monash.edu">shae.cox@monash.edu</a>

SEMESTER 1 & 2, 2011



# ACADEMIC OVERVIEW

## Introduction

### **Message from the Deputy Dean (Research): *Prof Ross Coppel***

On behalf of the Faculty, I extend a warm welcome to the Bachelor of Biomedical Science Honours students. You have demonstrated academic excellence throughout the course and deserve your place in the BMS Honours program. I am particularly pleased that so many of you have decided to continue your studies and get a taste of biomedical research through doing Honours. I hope that you will find it stimulating, challenging and rewarding, and that many of you will progress towards a PhD. The Faculty is proud of the achievement of all its Bachelor of Biomedical Science students and we look forward to the Honours cohort forming the backbone of the next generation of biomedical scientists and researchers at Monash. Our Faculty is committed to assisting you in every possible way to achieve your professional goals.

### **Message from the Course Convenor: *A/Prof Tim Cole***

I congratulate and welcome you, the class of 2011, to the Biomedical Science (Honours) program. This year will be an exciting, demanding, time in which you will find out how academic research is conducted and, we hope, adopt its values. You will inevitably learn new things about yourself, your aptitudes and aspirations that will strengthen you as a person and better prepare you for whatever career you may subsequently follow. The move away from coursework towards research-based study will demand new ways of working, and will reward you with a greater sense of personal achievement. You will gain new insights into the nature of knowledge and the opportunities that exist to extend it.

You will be supported in these endeavors by your project supervisor and other members within your laboratory. It should be a year in which, as well as gaining expertise in a specific area of research, you will learn how the scientific method is applied to discover new knowledge. With this object in mind, you will learn to develop hypotheses based on previous studies, define suitable experiments to test those hypotheses and prepare a scholarly research thesis. The thesis will describe your research, the significance of the results and the scientific context of the study. Irrespective of the experimental results you obtain, the thesis will be your opportunity to demonstrate your ability to critically evaluate the literature and your own study.

In addition to these benefits, I hope you will make many friends among your peers, other graduate students and staff within our Faculty and its affiliated institutes. You should use these people as resources to learn as much as possible outside the immediate confines of your research project, and so broaden your perspective as a young, outward-looking scientist. I also hope many of you will finish the year inspired to continue on to PhD study and become career biomedical scientists, as many of your predecessors have done.

You will also receive support from your School representative, the Course Co-ordinator (Dr Cox) and myself ([tim.cole@med.monash.edu.au](mailto:tim.cole@med.monash.edu.au)). We want to hear about your experience of the course in general, as well as any specific issues that affect your own progress. Any issues you raise will be treated in confidence and will receive thoughtful consideration by the BMS Honours Management Committee as appropriate. I hope that you and your elected student representatives will organise a great social program so that this demanding year can be punctuated with some fun, and you have the opportunity to share your experiences. I wish you every success in 2011 and the future.

## **Honours Administrative Information**

### **Honours on the internet**

Contents of this handbook and other information will be available on the unit MUSO site (available to all enrolled students). Any news or alterations to the timetable will be posted to this site.

### **Biomedical Science Honours Management Committee**

The BMS Honours Management Committee is responsible for managing the activities of the course. It ensures consistency in the curriculum, methods of assessment and the grade distribution across schools/departments; monitors supervision, student progress and deals with student support issues.

#### **School of Biomedical Sciences**

A/Prof Tim Cole (Chair)

Prof Robert Widdop

Dr Robert De Matteo

(A/Prof Jane Black ,alternate)

Dr Joanne Waring

Dr Shae-Lee Cox

(Student representatives to be elected)

#### **Central & Eastern Clinical School**

A/Prof Robyn Slattery

(Dr Kim Murphy , alternate)

Dr Anna Peeters

(Dr Elizabeth Douglas, alternate)

(Student representatives to be elected)

#### **Monash Institute of Medical Research & Southern Clinical School**

Dr Elizabeth Williams

(A/Prof Greg Hannigan, alternate)

Dr Paul King

(Student representatives to be elected)

#### **School of Psychology and Psychiatry**

Dr Penny Hasking

(Dr Shantha Rajaratnam, alternate)

(Student representatives to be elected)

Meetings to be held on Wednesdays, 9.30am in meeting room 1 (G35) in STRIP building 77 on:

16 February

10 August

23 March

21 September

11 May

09 November

06 July

7 December

Students from each School will be asked to elect two representatives to serve on the management committee. This will take place on orientation day. The student representatives will attend the management committee meetings to provide discussion, interaction and feedback about the course. General feedback, positive and negative, should be communicated through your School student representative.

### **Scholarships**

A small number of scholarships may be awarded on a competitive basis to students with the best undergraduate academic record:

1. **Monash University Jubilee Honours Scholarship.** Value: \$5000 per annum.
2. **Monash Vice Chancellor's Honours-PhD Scholarship.** Value \$5000 per annum (Honours component)
3. **Eric Glasgow Anatomy Bequest Scholarship.** Three available. Value \$4000 per annum.
4. **Faculty of Medicine, Nursing and Health Sciences Scholarship for Biomedical Science Honours.** Scholarships are available for domestic and international students. Value: \$5000 per annum for domestic students (ten available); \$10,000 per annum for international students.
5. **AMREP Honours Scholarships.** Two available. Value: \$6000 per annum.
6. **Monash PSA Insurance Medical Science Scholarship.** Value \$22,000 for 1 year.
7. **Geoff Bentley Pharmacology Scholarship.** One available. Value \$2250.

For more information about Honours scholarships please visit:

<http://www.adm.monash.edu/scholarships/applicants/honours-scholarships.html>

### **Student Support**

#### **Student Support Services**

It is well known that what affects you personally will also affect you academically – so taking action early is good self-management and many students have successfully completed courses despite experiencing difficulties of a personal nature.

#### **HWD (Health Wellbeing and Development)**

HWD offers a range of services to students including: *General health (GPs); counselling; chaplaincy and financial assistance.* Services are confidential and free or low cost, and can be accessed by phoning or dropping in to the HWD HUB:

- Clayton – 9905 3156, Western extension, 1<sup>st</sup> floor Campus Centre (building 10).
- Caulfield – 9903 2500, Room A1.29, Building A, level 1.

#### **Counseling Service**

The Counseling Service offers a daily drop-in service for new clients (check campus for times) with subsequent sessions by appointment.

#### **Community Care Line**

Community Care Line (9905 1599) offers assistance to any staff or student who feels threatened or unsafe, or has concerns about someone's wellbeing.

**Be proactive – ask for help early if concerned about yourself or someone else!**

## **Learning Objectives**

### BMS4100 Unit Objectives

On completion of the Honours year of the Bachelor of Biomedical Science, students will:

1. be able to critically review the scientific literature in their discipline;
2. understand the processes involved in the design, development and implementation of a research project;
3. be able to execute and analyse an appropriate set of studies;
4. be proficient in computer-based data acquisition, analysis, presentation, and word processing;
5. be able to write up scientific work in a potentially publishable way;
6. show communication skills in both oral and written presentation to a scientific audience;
7. have acquired a range of technical skills appropriate to their discipline;
8. have the capability to perform a variety of scientific procedures and techniques that are essential to the satisfactory completion and reporting of a research project;
9. have the ability to pursue higher studies in selected disciplines of biomedical science; and
10. have gained insight into the breadth and diversity of the biomedical sciences.

### BMS4200 Unit Objectives

On completion of the Honours year of the Bachelor of Biomedical Science, students will be able to:

1. critically review the scientific literature in their discipline;
2. explain the processes involved in the design, development and implementation of a research project;
3. recognise the breadth of statistical tests and their applicability to common research methodologies;
4. apply simple statistical tests.

## **Graduate Attributes**

Monash prepares its graduates to be:

1. responsible and effective global citizens who:
  - a. engage in an internationalised world
  - b. exhibit cross-cultural competence
  - c. demonstrate ethical values
2. critical and creative scholars who:
  - a. produce innovative solutions to problems
  - b. apply research skills to a range of challenges
  - c. communicate perceptively and effectively

## Assessment Summary

BMS4100 Biomedical Research Project (36 points)		Assessment
Literature Review	10%	School/Department
Seminar 1	S or NS	School/Department
Seminar 2	10%	School/Department
Thesis	80%	School/Department
Thesis Review*		School/Department
<b>Total</b>	<b>100%</b>	
* See page 23		
BMS4200 Advanced Studies in Biomedical Science (12 points)		Assessment
Discipline-Specific component	40%	School/Department
<b>Common Core Component</b>		
Statistics course	30%	Faculty
Written Critique	30%	Faculty
<b>Total</b>	<b>100%</b>	

## Teaching Approach

The Faculty of Medicine, Nursing and Health Sciences has a primary role in teaching Biomedical Sciences. However, many of the staff within the Faculty are very actively involved in research programs which are funded by the National Health and Medical Research Council (NH&MRC), the Australian Research Council (ARC) and other sources. Students also have the opportunity to undertake Honours projects at affiliated institutes such as the Monash Institute of Medical Research (MIMR), Prince Henry's Institute (PHI), Alfred Medical Research Precinct (AMREP), Victorian Institute of Forensic Science and the Monash Centre for Accident Research.

The Bachelor of Biomedical Science Honours program within the Faculty is devoted almost entirely to the research project that you have chosen. **We have kept coursework and examinations to a minimum so that your major focus (75% of total assessment) will be on your chosen research project.** The Honours year is a challenging one and will be one year that you will remember for the rest of your lives. Your dedication and patience will truly be tested. Even the best designed experiments can be unpredictable. One bad reagent or contaminant can lead to weeks or months of frustration. However, this is all a part of research. The important thing is to learn about the rational approach, scientific methods, experiment design, data collection and analysis and, most of all, trouble-shooting. Maybe you will be touched by the Prince of Serendipity and accidentally discover something very important. Some of the most significant discoveries such as the discovery of penicillin have been the result of serendipity. Be curious. Even though some may think of yourself as a "mere" Honours student, you may find something very exciting and important, which could launch a new career for you.

At this stage, you will have selected a supervisor and an area of research from research activities in the Faculty or an affiliated Monash University Research Institute. Your project should be defined before you start your Honours year. You will need to include a project outline when handing in your literature review that should contain the aims, rationale and research plan. Where applicable include details of basic research strategy, study design, sample size and statistical power, sampling methods, main variables to be measured/examined, instruments of measurement/intervention and their sampling methods and their validity, methods of data collection and analysis of data. Be warned that the Honours year will go faster than you think and it is useful to **generate a time line with your supervisor.**

Make good use of your supervisor. If you are not sure, ask. Your supervisor is there to give guidance, especially at critical times in your research. Your supervisor will also be requested to provide an assessment, at the end of the year, of your research capabilities and the level of Honours that he/she thinks you achieved and your capacity to continue on into postgraduate research. These comments will be taken into account in the final setting of your Honours grade.

Due to the increasing competition for PhD scholarships at Monash University, (and indeed throughout the University system in Australia), an H1 result is essential if you wish to apply for a scholarship to continue into a PhD. Even an H1 is not a guarantee of scholarship success. Clearly therefore, if you want to continue directly into a PhD program it is important that you achieve a high score within the H1 grade.

However, despite perceptions to the contrary, an H2A grade is still a very good result and it will not preclude most students from achieving their career aims. It may just mean that you have to work a little harder to reach those aims. In the past, Honours students with H2A grades have been accepted into undergraduate and postgraduate medical courses, veterinary sciences, physiotherapy, chiropractic, and audiology courses. PhD scholarships are possible, but students will usually need to obtain further research experience and apply for Honours 1 equivalence from the Faculty. Publication of papers from your Honours or other research, conference abstracts and evidence of active participation in national and/or international scientific conferences (acceptance and publication of conference abstracts) are all ways of improving your scientific profile to achieve H1 equivalence. Further information on the criteria for judging H1 equivalent status can be obtained from the Monash Research Graduate School.

Due to the significant impact of the Honours results on your career objectives and outcomes, great care is taken to provide fair and objective assessment of the Honours year. An examiners panel of 2-3 academics and scientists will ensure that the grading process is carried out with the highest standards. Members of this panel will be assessors themselves but will rely on a large number of “consultant” examiners who will read and assess your literature reviews and final theses.

## **Feedback**

### **Our Feedback to You**

- Literature review - Students will be given assessors comments and a grade which will be made available on MUSO or provided by your School/Departmental Co-ordinator.
- You will receive feedback from your assessors about your performance at your seminars. This feedback will be provided by your School/Departmental Co-ordinator.
- You can request the examiners comments on your thesis from your School/Departmental Co-ordinator.
- Grades for the statistics assignment and the written critique will be posted on MUSO.
- Details of the feedback you will receive for discipline specific component will be provided by your School or Department.

### **Your Feedback to Us**

Monash is committed to excellence in education and regularly seeks feedback from students, employers and staff. One of the key formal ways students have to provide feedback is through SETU, Student Evaluation of Teacher and Unit. The University’s student evaluation policy requires that every unit is evaluated each year. Students are strongly encouraged to complete the surveys. The feedback is anonymous and provides the Faculty with evidence of aspects that students are satisfied and areas for improvement.

For more information on Monash’s educational strategy, and on student evaluations, see:

<http://www.monash.edu.au/about/monash-directions/directions.html>

<http://www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html>

Honours Co-ordinators will inform students of the method being used for administering the survey for this unit towards the end of second semester.

## **Resources**

**Equipment and consumables** are provided by your supervisor.

### **Laboratory Notebooks**

Students will be supplied with a Faculty approved laboratory notebook. You should use this book to enter details about your experimental work and your results (please note that students should NOT use any other book for this purpose). During the orientation program the Faculty commercialisation manager will explain how these books should be used.

### **Photocopying facilities**

Photocopying facilities are provided at the discretion of the School/Department.

## **UNIT SCHEDULE**

### **When should I begin?**

The official commencement date for Bachelor of Biomedical Science Honours is **February 21**, which starts with the Orientation Program. However, students may start earlier only if this arrangement is acceptable to their supervisor. Students should not begin laboratory work until after the completion of the orientation program and the OH&S sessions. An early start may involve reading recommended references, preparation of the project outline and commencement of the literature review.

### **Orientation Program and training**

- The Orientation Day will be held on Monday **February 21st at 10.00am in lecture theatre M3, bld 13A. Attendance is COMPULSORY.** On orientation day, students will meet their academic school honours representatives and will be asked to nominate and elect School student representatives to serve on the course management committee.
- **COMPULSORY** sessions on "Regulatory Issues and Animal Welfare" will be held on **Tuesday 22nd February, 9:30am – 4:30pm in lecture theatre S3, bld25.** All students have been registered for this session. Please see the website for further information: <http://www.monash.edu.au/researchoffice/animal/moreinfo/training.html>
- **COMPULSORY** sessions on safety and risk assessment will be held on **Wednesday 23rd February at 9am – 1:15pm in lecture theatre M3, bld 13A.** All students must attend the safety sessions and should not begin laboratory work until these have been completed and a risk assessment of procedures performed. Important information regarding the student's and Department's responsibilities and obligations will be covered in these sessions.
- **COMPULSORY** session on Commercialisation, Good Laboratory Practise and Intellectual Property will be held on Monday 7 March at 10am-11am in lecture theatre H2, building 11.

**Orientation Day**  
**Monday 21<sup>st</sup> February**  
**Lecture Theatre M3, building 13A**

10.00am	Welcome I (from the Deputy Dean – Research) Welcome II (from the Honours Convenor)	Prof Ross Coppel A/Prof Tim Cole
10.15am	The Honours Course <ul style="list-style-type: none"> <li>• Structure: deadlines &amp; expectations</li> <li>• Student and the supervisor: roles and responsibilities</li> <li>• Special consideration procedures</li> </ul>	A/Prof Tim Cole
10.50am	Honours ‘A Student’s Perspective’	Past student
11.00am	Faculty resources and services <ul style="list-style-type: none"> <li>• IT and Multimedia</li> <li>• Histology</li> <li>• Microscopy and Imaging</li> </ul>	A/Prof Tim Cole (5 mins)  A/Prof Ian Harper (10 mins)
11.15am	Student support programs	Mio Ihashi
11.30am	Library Tutorials – tutorials on Endnote and Advanced search sessions.	Fiona Russell
11.45am	Bioethics	Prof Paul Komesaroff
12noon	Plagiarism	Dr Tomas Zahora
12.15pm	Students gather in to school groups to meet school coordinators and to elect student representatives	
12.25pm	Group photo and Lunch (Exhibition and outside space, ground floor bld 77)	

**Animal Welfare**  
**Tuesday, 22<sup>nd</sup> February**  
**Lecture Theatre S3, Building 25**

Training Course in Regulatory Issues, Animal Care and Use in Research and Teaching

Time: 9:30am to 4:30pm

*This is a COMPULSORY session for students working with animals.*

All Biomedical Sciences Honours students have been registered for this course. Consult the website for more details.

<http://www.monash.edu.au/research/ethics/animal/moreinfo/training.html>

If you are unsure if your project will involve the use of animals please contact your supervisor or Honours Co-ordinator.

**Occupational Health and Safety sessions**  
**Wednesday, 23<sup>rd</sup> February**  
**Lecture Theatre M3, Building 13A**

9am	Overview of Health and Safety <ul style="list-style-type: none"><li>• Risk Assessments</li><li>• Ergonomics and Manual Handling</li></ul>	Dr Bernadette Hayman
12noon	Safe Laboratory practice Chemical Safety OGTR information session <i>This session is COMPULSORY for lab-based students.</i>	Dr Bernadette Hayman Dr Simon Barrett

## 2011 Calendar of Events

Event	Date
<b>Orientation Program</b> (10am – 2pm in bld 13A, lecture theatre M3)	Monday, 21 February
<b>Laboratory Animal Care and Use</b> (9:30am – 4:30 am in Lecture Theatre S3, bld 25)	Tuesday, 22 February
<b>OH&amp;S and OGTR sessions</b> (9 am – 1:15 pm in bld 13A, lecture theatre M3)	Wednesday, 23 February
<b>Commercialisation &amp; IP session</b> (10am – 11am in lecture theatre H2, building 11)	Monday, March 7
<b>Writing Large documents</b> (11am – 12noon in lecture theatre H2, building 11)	Monday, March 7
<b>Literature Review Writing class (students to attend one class only)</b> (Register through the library online booking system in my.monash)	Tuesday, March 8 Monday, March 14 Wednesday March 16
<b>COMMON CORE COMPONENT: Stats Course</b> <b>(Mondays, 10am – 12 noon in lecture theatre H2, building 11)</b>	Begins 14 March
<b>LITERATURE REVIEW with Project Outline deadline</b> <i>Submit hard and electronic copy to School or Department Honours Coordinator.</i>	Thursday, April 14 (4pm)
<b>PRISM GraphPad workshop</b> <b>(10am -11am in lecture theatre H2, building 11)</b>	Monday 23 <sup>rd</sup> May
<b>SEMINAR 1</b> <i>Consult School or Department Honours Coordinator.</i>	Date and Time to be set by School or Department
<b>Common Core Stats Course Assignment deadline</b>	Friday, June 3 (4pm)
<b>COMMON CORE COMPONENT: Written Critique</b> (1pm – 5pm in histology lab CG63 in building 13C)	Wednesday, June 8
<b>DISCIPLINE-SPECIFIC COMPONENT</b> <i>Consult School or Department Honours Coordinator.</i>	Date and Time to be set by School or Department
<b>Seminar 2 abstract due</b>	Date and Time to be set by School or Department
<b>THESIS DEADLINE</b> <i>Submit to School or Department Honours Coordinator.</i>	Thursday, October 13 (4pm)
<b>SEMINAR 2</b> <i>Consult School or Department Honours Coordinator.</i> To be timetabled after the Thesis submission.	Date and Time to be set by School or Department
<b>THESIS REVIEW</b> <i>Consult School or Department Honours Coordinator</i>	Date and Time to be set by School or Department

## ASSESSMENT REQUIREMENTS

### Overview of the assessment of the Honours year

Each Honours student has selected a specific research project. The literature review of the selected research topic is designed to provide each student with the opportunity to identify important scientific literature for the introduction and background to their final thesis.

Honours students should achieve, in quality and quantity, a high standard of work that clearly demonstrates an advanced level of understanding of the research topic, a capacity to critically assess previous research and the ability to synthesise the information into a logical and clearly written review.

### Assessment process and grades

In order to provide a fair assessment system for students, the School/ Department co-ordinator will establish and head a panel of examiners of the academic/research staff, with preference for staff members who are actively engaged in research activities. The membership of this panel will include researchers selected from the list provided by supervisors. Each assessor is given a set of objective criteria to guide their assessment.

Ongoing feedback will be given to each student as to his or her performance.

**The Biomedical Science Honours Course (code 3418) comprises two units:**

- **BMS4100 = 75% of overall course mark**
- **BMS4200 = 25% of overall course mark**

Students will receive grades for assessment tasks throughout the year. The common core component grades will be posted on the MUSO website (see approx timetable below):

- Literature Review – week of Monday 9th May
- Common Core Statistics assignment – week of Monday 4th July
- Common Core Written Critique – week of Monday 4<sup>th</sup> July

Grades for discipline specific assessment tasks will be distributed by your departmental co-ordinator.

Official final year marks will be released to students in December 2011 through WES.

### **BMS4100 Individual student research project**

- Can be undertaken at any approved location, including all Departments, affiliated Institutes, and Centres of the faculty. Under some circumstances projects may also be undertaken in other Faculties.
- Must be conducted under the supervision of a member of the academic or research staff of the Faculty.
- The choice of project and supervisor will largely be left to the student.
- Assessment of the research project will be through a **literature review & project outline, seminars, final thesis** and the **thesis review**.

## **BMS4200 Discipline Specific Component**

Your School/Departmental coordinators will be responsible for this component via the Schools system or within Departments based within each of the schools. This could take the form of advanced lecture series, poster presentation, learning specialized techniques or critical analysis of a discipline specific journal article. Details of these programs are provided later in this handbook.

## **BMS 4200 Common Core Component**

This component of your assessment will be based on topics unrelated to your individual research project. It will involve an advanced statistics course, and a written critique in a three-hour examination format. Further details are available in this handbook.

## **Assessment Tasks**

### **BMS4100 Biomedical Research Project**

#### **Assessment Task 1: Literature Review**

**Due Date: 4pm, Thursday April 14, 2011**

**Submission:** The literature review and attached project outline should be submitted to your School or Departmental representative. **SUBMIT THREE [3] HARD COPIES** and an **ELECTRONIC COPY**. A signed assessment coversheet must be attached. These outlines will be sent out to members of the academic/research staff in the University for comment.

#### **Details of task:**

For the literature review, attention is drawn to the following requirements/guidelines:

- COVER PAGE (project title, student name and ID number, department/institute, word count [see below]).
- TABLE OF CONTENTS.
- LITERATURE REVIEW
- PROJECT OUTLINE
- REFERENCES
  - Students may choose which referencing system they wish to use, but the system must be one of those in regular use in biomedical journals. If in doubt, students should consult with their supervisor and use a system in regular use in journals in their discipline.

For the Project outline the supervisor and student are required to submit a summary providing an outline of the background/rationale of the research, the aims of the project, the experimental design and methodology, (including the statistical methods proposed for analysing the data), and the anticipated outcome of the research which has been agreed to by both the supervisor and student. The aim of this task is to get the student and supervisor talking, planning and discussing possible obstacles, difficulties, etc. A timeline outlining your anticipated progress through the year should also be included. The project outline is **NOT** a binding document, so changes to the research project are permitted even after submission of the outline.

#### **Supervisor input into the literature review**

Supervisors should interact freely with their students in the planning of the literature review. Students and supervisors should plan together the layout of the literature review, the disposition of figures, etc. They should advise, but leave to the student, decisions about data interpretation, etc. Students should then prepare a first draft. Students may submit one draft only of the literature review for comment by their supervisor(s). The supervisor can edit hard copy of this first draft but

only very broadly. Grammar, spelling corrections, and other typographical errors are the responsibility of the student. Supervisors should NOT CIRCULATE draft versions of the review to staff, other than the co-supervisor, for detailed comments. Supervisors and co-supervisors must comment on exactly same version of the review. Supervisors should never write any part of the review themselves. Supervisors are not permitted to edit the literature review draft using track changes. This is important since the review must be original work that is clearly identified as the student's effort and not that of the supervisor. Note that drafts cannot be circulated by the student to any other staff members, postdoctoral fellows, research assistants or to postgraduate students. Note that supervisors and co-supervisors will not be examiners of the literature reviews written by their own students.

**Word limit:** 4000 ( $\pm$  10%) words. Please note that the word count DOES NOT include the references in the bibliography, figures, figure legends, tables and graphs or PROJECT OUTLINE. The word limit only applies to the words in the body of the text.

Project outline should be a maximum of 4 pages.

**Value:** 10%

**Presentation requirements:** 11 point Arial font, double spacing.

**Estimated return date:** week of Monday 9th May

**Criteria for Marking:**

Grade	Mark range	Criteria
HI upper (Outstanding)	90-100	An outstanding piece of work. Has total control of relevant literature and shows an excellent synthesis of factual and conceptual components. Shows outstanding insight and an ability to structure and synthesize published material with research project. Work reflects extensive reference to original articles. The candidate could be expected to achieve no more. Expression, style, grammar and referencing are outstanding.
HI lower (Excellent)	80-89	An excellent piece of work. High level of understanding of all relevant publications with excellent, relevant use of referencing and examples. Communicates clearly and effectively using a coherent structure showing insight and perceptiveness. Work reflects extensive reference to original and review articles. A commendable degree of academic originality. Expression, style, grammar and referencing are excellent.
H2A upper (Good)	75-79	A good piece of work. Shows a firm grasp of majority of the relevant literature. Argues well and effectively and is able to criticize and evaluate material. Evidence of fairly extensive background reading beyond the review articles. Sustained argument throughout. Well structured and shows good evidence of wider background reading. Expression, style, grammar and referencing are good.

H2A lower (Satisfactory)	70-74	A competent piece of work, which shows reasonable understanding of the material and presents it satisfactorily with appropriate examples and referencing. Structure is apparent and there is a coherent (though possibly weak) argument with adequate conclusion. Evaluative/critical/analytical skills present but not highly developed. No obvious weaknesses except a lack of originality. Expression, style, grammar and referencing are moderately good.
H2B upper (Pass)	60-69	An adequate piece of work, which shows some structure, relevant use of examples and evidence of background reading. Some limited referencing. Limited evidence of independent thought and the development of substantiated arguments. Conclusions not well developed. Evaluative/critical /analytical skills present but not highly developed. Expression, style, grammar and referencing are adequate. No obvious weaknesses except a lack of originality.
H2B lower (Borderline/ weak)	50-59	Argument obscure, weak or unbalanced. Only partially relevant. Have major content omissions. Some understanding, reflection, structure and referencing. Partially successful attempt to use relevant examples and facts. Some reading. Conclusions weak. Expression, style, grammar and referencing limited.
H3 (Fail/ Unsatisfactory)	0-49	Weak. Lacking evidence of preparation, evaluation or reflective skills. Largely irrelevant. Little or no understanding. Hardly any, or no, evidence of reading or organization. Expression, style, grammar and referencing very poor.

### **Assessment Task 2: Seminar 1**

**Due Date: date and time to be set by School or Department**

Your School or Departmental representatives are responsible for the coordination of these seminars. All students enrolled in this course must attend these seminars at their Schools or Departments in which they are undertaking their research work. In the case of the School of Biomedical Sciences, these seminars may be incorporated into existing Honours programs within each one of the six Departments. In the case of the Clinical Schools, students within each school will come together at a site nominated by the Clinical School representatives to present their seminars.

#### **Details of task:**

Seminar 1 should provide a review of the relevant literature (with key references indicated), a statement of the hypothesis to be tested, the specific aims of the research, an outline of the experimental design, (including information on the statistical tests you expect to use and a justification of them), and a very brief indication of the expected outcomes of the project. There is no requirement to present results at this seminar, even if you have already obtained data from experiments in progress.

**Value: satisfactory or non satisfactory**

**Presentation requirements:** All presentations should be based on **PowerPoint**.

The time allocated for each student during the Seminar 1 is **15** minutes (10 min presentation with a 5 min question time).

There is no absolute time prescription for the various components of the seminar. Clearly, the structure and emphasis of each seminar will to some extent be influenced by the project structure and the nature of background information on which it is based. Seminars may differ greatly in emphasis depending on the timing of the various segments. However, as a general guide, you should consider the following time allocations for each of the components when planning your seminar.

<i>General Introduction</i>	<i>1 min</i>
<i>Review of the literature/rationale for the project</i>	<i>4 min</i>
<i>Aims</i>	<i>1 min</i>
<i>Experimental plan (including statistical analysis)</i>	<i>3 min</i>
<i>Expected outcomes</i>	<i>1 min</i>
<i>Total</i>	<i>10 min</i>

The 10 minute presentation time for each student will be strictly adhered to. For those who have thoroughly prepared and practiced their seminars, timing should not be a problem.

### **Criteria for Marking:**

Each seminar will be assessed by a panel of at least 3-4 examiners. They will be asked to consider your presentation according to specific criteria.

See the assessment sheet on the next page for marking criteria.

**MONASH UNIVERSITY**  
**FACULTY OF MEDICINE, NURSING AND HEALTH SCIENCES**  
**BACHELOR OF BIOMEDICAL SCIENCES HONOURS.**

**Program 2011**

**SEMINAR 1 ASSESSMENT SHEET**

**Student Name & ID:** \_\_\_\_\_

<b>Rating (tick appropriate box)</b>	v.high	high	med	low	v.low
1. Command of expression and quality of presentation					
2. Evaluation and integration of existing literature					
3. Clearly stated aims and rationale for project					
4. Understanding of research methods, attention to critical design issues in the execution of project					
5. Significant insights and original thoughts dealing with the critical issues					
6. Response to questions					

Comments:

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**Examiner's name:** \_\_\_\_\_ **Examiner's Signature:** \_\_\_\_\_

## **Assessment Task 3: Thesis**

**Due Date: 4pm, Thursday, October 13, 2011**

**Submission:** SUBMIT THREE [3] bound copies to your School/Departmental Coordinator. You are also required to submit a signed assessment coversheet with your thesis.

### **Details of task:**

The Honours thesis is the culmination of all the work that you have done during the year in your research project. It is one of three avenues in the course that provides you with an opportunity to display and discuss your research achievements. Honours students should achieve, in quality and quantity, a high standard of work that is publishable in a reputable, peer-reviewed journal. Flick through a previous Honours thesis to get a clear idea of what is expected in terms of content and presentation.

### **When to finish your research?**

Students are advised to try to finish their experimental work at least one month before the thesis submission date. It is important that you let your supervisor read and comment on each section of your thesis and provide feedback, not only on content but also on format. It is important that you ensure that your supervisor has sufficient time to comment on your section drafts well in advance of that date, several weeks before submission should be allowed. Of course, syntax, corrections, and typing are the responsibility of the student. Students are advised to discuss the format of their thesis and the proposed content with their supervisor well before commencing writing. Additional advice may be sought from the Course Coordinator.

In the case of the two Clinical Schools, each supervisor will nominate thesis examiners to the respective School Coordinators. In the case of the School of Biomedical Sciences, the Thesis examiners will be nominated by the Honours coordinators of each Department. Your School representatives will oversee the examination process for your thesis.

### **Thesis structure and content**

The thesis should contain the following sections:

- A title page (Thesis length should be stated on this page)
- Declaration. A confirmation of the originality of the work and a clear indication of any significant practical input into the research by others
- Acknowledgments
- Summary/Abstract (2 pages, 11 point arial font, double-spaced)
- Introduction (modified literature review to suit the project and results obtained, aims and hypothesis tested. Generally this would be shorter than the literature review that was written at the beginning of the year and would begin with an explanation of the research problem)
- Materials & Methods
- Results
- Discussion
- Conclusions and Future Directions
- Bibliography
- Appendices

## **Abstract/Summary**

The abstract should state the aims of the research and the significance of the results. The reasons for the project should be made clear, the methods should be stated briefly (unless your project was biased heavily towards development and testing of methodology), the results should be concisely presented and their significance clearly indicated. There should also be a brief summing up of the conclusions reached from your research.

## **Introduction**

This section should give a comprehensive background to the research project, the reason(s) for undertaking the study and its significance. A clear statement is required of the problem(s) being investigated and this should be supported by reference to all the pertinent published information on the subject. Most of this information will have already been incorporated into your literature review. In most cases your literature review can be included in the thesis with some revisions to ensure that the content is still relevant. Any relevant new information, which has been published on your thesis topic, should be included. In some situations, however, because of changes in the direction of your project during the year, it may be necessary to restructure your literature review to reflect the new direction(s) of your research.

## **Materials and methods**

All the methods used in the study need to be described in detail and particular attention should be given to any specific innovations or any changes that have been made to standard methods or techniques. Explain clearly the animals used, the experimental plan - especially the controls and why they were selected - and explain the rationale for the particular procedures that you have chosen. Particular attention to the methods selected for data analysis is required.

## **Results**

The results should be concise and focussed on the tables, figures and diagrams, which provide the detail of your research findings. Do not discuss your results in this section (the discussion is obviously the place for this!). In order for your results to have the most impact on the reader, careful planning and display of the data is needed and this should be done in collaboration with your supervisor. You are required to prepare all of your own tables and diagrams if possible. If for some reason (eg. complexity?) you need assistance from another person, acknowledge this assistance in your thesis. Tables require a concise but informative heading and should be able to be understood without reference to the text. Figures and diagrams should be clearly presented and be supported by a caption situated below or on a facing page. The statistical significance of the data presented in tables and figures should be clearly indicated using standard methods and include the statistical test used and specifically statistical parameters. Note: all photographs or diagrams should include an indication of scale or magnification.

## **Statistics**

A small practical point - if expert advice on statistical analysis is required it is advisable to do this during the critical planning of the project, rather than at the end of the year. Students will attend a compulsory statistics course that will be assessed as part of the Common Core Component (BMS4200) at the beginning of the year.

### **Cost of thesis illustrations and binding**

Students may use the services of the Faculty multimedia group or any other illustration service. All work given to the multimedia group or other, must have the supervisor's signature approving the expenditure, as this will be charged to your supervisor.

## Discussion

This section should be used to synthesise the results of your study and relate them to the findings of previously published studies. The discussion provides an opportunity for you to demonstrate your intellectual capacity for originality, logic and critical analysis. It is important that you provide a clear interpretation of the data and explain the significance of the findings in the context of previous studies. It is also appropriate to indicate in this section what you believe the important future directions should be in this area of research. Be objective and constructive in your interpretations and conclusions.

## Bibliography

Students may use any referencing system. Keep references to a minimum and cite only those which are directly relevant. Try not to cite too many reviews or textbooks. Remember that your work is original research and therefore most of your reading and citations should be of other original works. The easiest and most efficient method of maintaining an updated list of your bibliography is using the program EndNote. Tutorials on how to use EndNote will be conducted at the beginning of the year. For further information please contact Katrina Tepper from the Hargrave-Andrews Library on 9905 2638.

## Appendices

Appendices should be kept to a minimum. You may include information on methods in an appendix but it is preferable, if possible, to cite standard methodology to an appropriate published journal article. Any method you have developed or modified should be included in your methods section. It is acceptable to provide tables of data in appendices for material which is presented graphically in the text.

## Role of your supervisor in thesis preparation

Supervisors are expected to participate with students in the design of experiments, other data collection methods and the interpretation of data. Supervisors should interact freely with their students in the planning of the thesis. Students and supervisors should plan together the layout of the thesis, the disposition of figures, etc. They should advise, but leave to the student, decisions about data interpretation, etc. Students should then prepare a first draft. Students may submit one draft only of the thesis for comment by their supervisor(s). The supervisor can edit hard copy of this first draft but only very broadly. Grammar, spelling corrections, and other typographical errors are the responsibility of the student. Supervisors should NOT CIRCULATE draft versions of the thesis to staff, other than the co-supervisor, for detailed comments. Supervisors and co-supervisors must comment on exactly same version of the thesis. Supervisors should never write any part of the thesis themselves. Supervisors are not permitted to edit the thesis draft using track changes. This is important since the thesis must be original work that is clearly identified as the student's effort and not that of the supervisor. Note that drafts cannot be circulated by the student to any other staff members, postdoctoral fellows, research assistants or to postgraduate students. Note that supervisors and co-supervisors will not be examiners of the thesis written by their own students.

## Tips and tricks for thesis preparation

1. Make sure that you keep multiple copies of computer discs and **always** backup all your work. Always save any alteration that you make to your thesis draft. Computer CRASH cannot be used as grounds for seeking an extension. Avoid the last minute rush in case of hardware/software faults and human exhaustion.
2. Use your spell check programs (or for scientific/medical reference the internet dictionary at: [www.dictionary.com](http://www.dictionary.com)). Avail yourself of them if you have any doubt of your capabilities. Assessors get very upset when they see too many spelling errors.
3. Figures and tables must be referenced from the text and must be appropriately captioned.
4. Failure to include cited references in the bibliography is an unacceptable error.
5. All information, which is not your own work, must be referenced to its source.
6. Quality rather than quantity is the measure of achievement!

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### **What to do if all your results are negative?**

Don't panic. While it is obviously better for your esteem and your thesis to be able to report on an excellent set of data, it sometimes happens, for reasons not of your own making, that well conceived and executed studies produce negative results, despite your best efforts. If you find yourself in this situation, it is important that you provide a convincing discussion of why the results were negative (obviously, lack of diligence or care is not a good defence). Give a logical appraisal of how the protocols and experimental approach may be changed in a future study to achieve your original aims. If your project is not working, see the School Coordinator or Departmental Honours Coordinator as soon as possible.

### **Final check of your thesis before submission**

The following questions are provided to assist you before submitting your thesis. This is what each assessor will be looking for:

#### Organisation and presentation

- \* Are the ideas lucid, clearly expressed and well presented?
- \* Are all graphs, tables and diagrams clearly presented and legible and supported by a detailed heading or caption?
- \* Is the thesis layout and general presentation well conceived?
- \* Is the bibliography complete and comprehensive, and cited correctly?
- \* Has the student satisfactorily completed all the requirements for the thesis?

#### Abstract

- \* Does the abstract clearly summarise all the important findings of the project?
- \* Do the conclusions provided give an accurate interpretation of the results?

#### Understanding of the topic

- \* Are the aims of the study and the hypotheses to be tested by the experimental design clearly defined?
- \* Does the background clearly give context and explain the study?

#### Methodology and experimental design

- \* Are the methods sound and used appropriately, and is the experimental strategy appropriate?
- \* Has the student provided sufficient details of the methods used?
- \* Have all relevant procedures been considered in the experimental design?
- \* How innovative or novel is the design of the experiments?

#### Data collection, treatment and analysis

- \* Are the results relevant and have they been displayed in a clear and appropriate manner?
- \* Does the text of the results section(s) draw to the reader's attention to the important features of the data?

#### Discussion

- \* Has the candidate demonstrated the capacity to interpret the results in a clear, effective, critical and logical manner?
- \* Is the capacity for intellectual originality demonstrated?
- \* Is the discussion systematic and relevant and has the significance of the findings been made clear?
- \* Has future direction for the research been suggested and is it appropriate?

**Word limit: 15,000 (excluding references, table figure and legends)**

**Value: 80%**

**Presentation requirements:** Minimum 11 point Arial font. Double-spacing.

**Criteria for Marking:**

The Honours thesis assessment is based on the following criteria:

- (a) a clear understanding of the research topic and the relevant background literature,
- (b) a logical sequence of experiments from which a set of appropriate conclusions are drawn,
- (c) demonstrated skills in and understanding of experimental planning and design, experimental procedures and equipment used in the project,
- (d) placement of the findings of the research project into an accurate and appropriate scientific context,
- (e) a thesis that is well prepared and organised, and presented clearly and concisely.

**A guide to Honours grades for thesis**

**FIRST CLASS (H1)** - This grade is for an excellent thesis that achieves a mark of 80% or above.

**SECOND CLASS (H2A)** - This grade is for a very good thesis that achieves a mark between 70% and 79%.

**SECOND CLASS (H2B)** - This grade is for a good thesis that achieves a mark between 60% and 69%.

**THIRD CLASS (H3)** - For a satisfactory thesis which achieves a mark between 50% and 59%.

**FAILED (F)** - Very seldom. For an unsatisfactory thesis which does not achieve at least 50%.

The BMS Honours thesis rubric is on the next page.

Criteria	High HD (85+)	HD (80)	D (70)	C (60)	P (50)	N (<50)
<p><b>Introduction and statement of the problem (15 marks)</b> Is the research problem clearly explained and in context?</p> <p>Are the aims of the student's experimental program explained clearly and simply.</p>	<p>Outstanding insight and understanding of the literature and the questions that need to be answered</p> <p>Experimental program is clearly and correctly explained with accurate interpretation of meaning and context</p>	<p>Excellent understanding of the literature and the questions posed with only a few errors/omissions that are largely minor and understandable</p> <p>Experimental program is clearly and correctly explained with accurate interpretation of meaning and context. There may be few minor errors that overall are of little consequence</p>	<p>Overall has a good understanding of the field and questions but lacks insight into some of the issues</p> <p>Overall explanation of experimental program is show a good understanding but lacks some insight into/misinterprets some of the minor areas</p>	<p>Has some insight into the field and literature but fails to grasp some of the basic and/or important issues</p> <p>Overall explanation of experimental program is shows a good understanding but fails to grasp some of the basic and/or important issues</p>	<p>Very patchy grasp of field and seems to have made only marginal effort to understand the issues</p> <p>Very patchy explanation of experimental program</p>	<p>Weak, largely irrelevant, little or no understanding. Hardly any, or no, evidence of reading or organization. Expression, style, grammar and referencing very poor. Aims not clearly defined</p>
<p><b>Results, data treatment and analysis (40 marks)</b> Clear, lucid presentation and explanation of experiments conducted (including the use of graphs, tables and figures as appropriate).</p>	<p>Clear, lucid presentation and explanation of experiments conducted, all graphs, tables and figures are clear and accurate</p>	<p>Clear, lucid presentation and explanation of experiments conducted, all graphs, tables and figures are clear and accurate</p>	<p>Presentation and explanation of experiments conducted in not clear and lucid or, graphs, tables and figures may be lacking in clarity and accuracy</p>	<p>Presentation and explanation of experiments conducted not clear and lucid, graphs, tables and figures are not always clear and not always accurate</p>	<p>Presentation and explanation of experiments conducted, graphs, tables and figures is haphazard, not clear and not always accurate</p>	<p>Weak. Lacking evidence of preparation, evaluation or accuracy.</p>
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Is the data presented relevant, intelligible and accurate?	Only relevant data is presented. Presentation is always intelligible and accurate	Only relevant data is presented. Presentation is always intelligible and accurate	A small amount of irrelevant data is presented. Presentation is mainly intelligible and accurate	Mainly relevant data is presented. Presentation is lacking in intelligibility and accuracy	Mainly relevant data is presented. Presentation is lacking in intelligibility and accuracy	Poor presentation of figures
Does the text bring the salient points to the attention of the reader?	The text always accurately describes the findings and brings the all the salient points to the attention of the reader	The text always accurately describes the findings and brings most salient points to the attention of the reader	Most of the time the text accurately describes the findings and but only sometimes brings the salient points to the attention of the reader	Most of the time the text accurately describes the findings but does not bring the salient points to the attention of the reader	The text does not accurately describe the findings and does not bring the salient points to the attention of the reader	Description of data is poor, not clear to the reader.
<b>Discussion and conclusions (30 marks)</b> Has the student demonstrated an ability to think critically about their own work?	The student has demonstrated an outstanding ability to think critically about their own work.	The student has demonstrated an excellent ability to think critically about their own work.	The student has demonstrated a good ability to think critically about their own work.	The student has demonstrated a reasonable ability to think critically about their own work.	The student has not demonstrated a reasonable ability to think critically about their own work.	No real evidence of critical analysis of the data or critical thinking
Relevance and completeness of the conclusions drawn; have alternative explanations been considered (if appropriate)? If speculative conclusions have been drawn are they within the bounds of possibility?	The conclusions drawn are relevant and comprehensive; alternative explanations that show insight, critical thinking and are within the bounds of possibility have been described	The conclusions drawn are relevant and comprehensive; alternative explanations that show some insight, critical thinking and are within the bounds of possibility have been described	The conclusions drawn are mostly relevant and comprehensive; alternative explanations show some insight and critical thinking but are but are generally lacking in applicability	The conclusions drawn are mostly relevant, but lacking in comprehensiveness; alternative explanations lack insight and critical thinking	The conclusions drawn are somewhat relevant, but lacking in comprehensiveness; no alternative explanations are given	Relevant conclusions not drawn, Not comprehensive

Have future research directions been suggested? Is the significance of any findings made clear?	Clearly understands and indicates where the field is heading and is able to accurately express own opinion as to where the field is heading. Has accurately defined the role and significance of own work/findings in the broad context of the field.	Understands broad direction of research and impact of own work, but may not indicate by own opinion that understanding is outstanding. Has accurately defined the role and significance of own work/findings in the broad context of the field.	Has been able to defined the role and significance of own work/findings in the broad context of the field but with some relatively minor lack of focus or direction	Has some, albeit incomplete idea of the likely direction of research or impact of their work there is little clear or real insight	Only moderate understanding of how their work has advanced the field and what kind of direction future research may take	No future research directions outlined
<b>Organisation and presentation (15 marks)</b> Has thought been given to layout and general presentation (within the constraints of guidelines)?	Layout and general presentation of thesis is well structured, logical and clear.	Layout and general presentation of thesis is generally well structured, logical and clear.	Layout and general presentation of thesis is mostly well structured and logical.	Layout and general presentation of thesis is lacking in structure.	Layout and general presentation of thesis is cumbersome and difficult to read.	Thesis is poorly organized and poorly presented, Many mistakes.
Are ideas well organised and clearly expressed?	Reads well, with few if any errors in spelling, grammar	Occasional errors and difficulties in sentence construction but well written	Passages that read well but other areas with difficult to follow expressions	Some attempts at structure and grammar but errors and significant areas of the editorial with poor expression	Poor attention to detail, grammar and spelling but some structure and appropriate use of language	Very poor grammar and spelling
Quality of the figures and other visual aids.	Outstanding quality of the figures and other visual aids.	Excellent quality of the figures and other visual aids.	Good quality of the figures and other visual aids.	Reasonable quality of the figures and other visual aids.	Inconsistent quality of the figures and other visual aids.	Figures badly presented
Is the reference list or bibliography appropriately presented?	Citing of all references in bibliography is accurate and in text citation is always accurate	Citing of all references in bibliography is accurate and in text citation is always accurate	Citing of most references in bibliography is accurate and most in text citation is accurate	Citing of most references in bibliography is accurate and most in text citation is accurate	Citing of many references in bibliography is inaccurate and in text citation may be inaccurate	Little citation or Inaccurate referencing

**Bachelor of Biomedical Science Honours Course**

**BMS4100**

**Thesis Assessment Sheet**

**Student Name:** \_\_\_\_\_

**Title of Thesis:** \_\_\_\_\_

**Comments:** *(this section may be returned to the student)*

Use an additional page if necessary

.....  
PLEASE PROVIDE A MARK IN EACH COLUMN

<b>Introduction and statement of problem (15)</b>	<b>Results, data treatment &amp; analysis (40)</b>	<b>Discussions &amp; conclusions (30)</b>	<b>Organisation &amp; Presentation (15)</b>	<b>TOTAL SCORE (out of 100)</b>

**Name of Assessor:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**INDICATIVE Scores for Honours grades:**

H1 80+      H2A 70 - 79      H2B 60 - 69      H3 50 - 59      Fail <49

### **Assessment Task 3: Thesis Review Interview**

**Due Date:** date and time to be set by your School or Department.

#### **Details of task:**

After submitting your thesis you will be required to attend a. During this 20-minute interview, your thesis examiners will discuss various aspects of your thesis with you. They may, for example, seek clarification from you about statements you have made, they may wish to challenge the conclusions you have drawn from your data or they may wish to explore your views on what further experiments you could have done had you had more time. While the interview will deal predominantly with matters relating directly to the thesis you should also be prepared to discuss more general aspects which provides the background to your project.

The discussion will also provide an opportunity for you to bring to the attention of the examining panel any circumstances which you feel may have affected your research, including the preparation and/or production of your thesis, during the course of the year.

The supervisor's comments on your thesis will be considered. The final mark for your thesis will be determined by the conclusion of the review. The purpose of the review is to arrive at the final mark, having taken all circumstances into consideration. It must be noted, however, that this review will not be the primary determinant of the mark for your thesis: this is derived from the marking of the thesis itself. The review session may be used to moderate the thesis mark, but will not be used to change it substantially.

### **Assessment Task 4: Seminar 2**

**Due Date:** date and time to be set by your School or Department. To be timetabled after the thesis submission.

#### **Details of task:**

##### **Abstracts**

Each student will be asked to provide a one page abstract to his or her School/Department prior to the seminar date. These will be collated into an abstract booklet and distributed to assessors, supervisors and members of the audience. may include up to four key references.

##### **Seminar format**

Individual Schools/Departments will schedule this second seminar. This seminar is timed to coincide with the completion of BMS4000 Honours research projects. In this seminar series each student is expected to present the results of their research project to indicate the extent to which the original aims of the project have been satisfied.

This seminar should be structured in the following way. The background of the study should be briefly revisited in order to provide a clear introduction (but in less detail than in the initial seminar). This should outline the reasons for the study and the hypothesis that is being tested (if appropriate). A brief statement of aims and a more in-depth description of the methodology used in your project should follow. It is obviously important that you give sufficient detail in the methodology for the audience to understand how you obtained the results. There is often a balance here between glossing over your procedures and providing too much intricate detail. The extent and emphasis of your methodology section may also depend on whether you have used standard published procedures in your project or based part of your research on the development of a new method(s) to achieve your aims.

The results and discussion sections are obviously the most important components of this seminar. Clarity is essential, but the way in which this part of the seminar is presented may vary between students, depending upon the plan and outcomes of the project. For some projects with a series of sequential experiments, it may be appropriate to present the results of each experiment or group of experiments and then discuss these results before moving to the next experiment(s). For other projects, it may be more relevant to describe all of the results and then interpret them in a single discussion section. Ensure that your results have been appropriately analysed and are clearly displayed and interpreted. Where possible avoid repetition. Be prepared to explain and, if necessary, defend your statistical analysis of the data.

Interpretation of your data is a critical part of the seminar. You need to clearly indicate to the audience the meaning of your results, what advance (if any) the data has provided in the field of your research, whether you have been able to prove the hypothesis you were testing and to what extent you achieved the original aims of the research. The seminar should conclude with a very brief summary of the findings (conclusions).

**Value: 10%**

**Presentation requirements:** All presentations must utilise PowerPoint. All PowerPoint files must be loaded into the computer of the venue well in advance of the seminar date.

This seminar is of **25 minutes** duration and consists of a 20-minute presentation and a five minute discussion. Please note that these times may differ between Departments/Schools.

There is no absolute time prescription for the various components of your seminar. Clearly, the structure and outcome of each research project will to some extent influence the structure and emphasis of each seminar. As a general guide, it is suggested that you consider the following time allocations for each of the components:

<i>Introduction (including hypothesis/aims)</i>	<i>3 min</i>
<i>Methodology</i>	<i>5 min</i>
<i>Results</i>	<i>8 min</i>
<i>Conclusion/Summary</i>	<i>4 min</i>
<i>Total</i>	<i>20 min</i>

The 20 minute presentation time for each seminar will be strictly adhered to. The coordinator will have a timer which will buzz after 19 minutes to indicate that you have one minute remaining in which to conclude your presentation. The timer is then reset for five minutes for question time. There is no substitute for thorough preparation. Practice developing a clear, concise and professional seminar presentation.

Abstracts are to be 11 point font and double-spaced.

### **Criteria for Marking:**

As in Seminar 1, this seminar will be assessed by at least 3-4 members of the academic/research staff of the department, school and associated institutes. Any external examiners listed by supervisors will be invited to be present and assist with the assessment process. They will be asked to consider your presentation according to specific criteria. A blank sheet is provided in order for you to get an appreciation of the seminar assessment process. Individual scores are marked out of 100.

Immediately after the seminar session there will be a meeting of the assessors at which your presentation will be discussed and a final score/grade decided. This will be entered into your assessment sheet for the year and used as a component in determining your final Honours grade/mark.



## **BMS4200 Advanced Studies in Biomedical Science**

### **Assessment Task 1: Discipline specific component**

**Due Date:** dates and times to be set by your School or Department

#### **Details of task:**

All students are required to complete a discipline specific component. Usually this is undertaken in the same Department/School as the research project. However, in some circumstances it may be more appropriate for students to undertake a discipline specific component at another department or school. Students should read the choices of discipline specific components below and determine which is most closely related to their research project. This should be done in consultation with your supervisor and your School Honours representative.

**School/Departmental coordinators will be responsible for this component via the Schools system or within Departments based within each of the schools. This could take the form of advanced lecture series, advanced statistics courses, learning specialized techniques or critical analysis of a discipline specific journal article.**

The following table outlines the discipline specific component for each of the Schools/Departments.

**Value: 40%**

Department and Co-ordinator	Discipline specific component	Weight of assessment (%)
<b>School of Biomedical Sciences</b>		
<b>Anatomy &amp; Developmental Biology</b> <i>Co-ordinator – Dr Robert De Matteo</i>	Compulsory weekly attendance at Departmental seminar series (semesters 1 and 2)  2000 word essay based on one of the departmental weekly seminars. The topic must not be related to the student's Honour project topic.  30 minute journal club presentation of a journal article (relevant to the student's project)	No assessment  50%  50%
<b>Biochemistry &amp; Molecular Biology</b> <i>Co-ordinator – A/Prof Tim Cole</i>	Assessment of Data Exam (5 hrs – written)  Journal Club (30 min oral presentation)  Advanced Biochem Techniques lectures	50%  50%; Weekly from March – Aug  No assessment; Weekly (Fri) from March - May
<b>Microbiology</b> <i>Co-ordinator – Prof Julian Rood</i>	Colloquium on a current research area in Microbiology; Format varies from year to year but usually involves one of two sessions with the colloquium leaders followed by student presentations, which may take the form of oral or poster presentations. Considerable independent literature research is required.  Compulsory weekly attendance at Departmental seminar series (semesters 1 and 2)	65% Poster or oral presentation and discussion; held March - April.  35% Take-home written assignment based on recent paper in field.
<b>Monash Immunology and Stem Cell Laboratories</b> <i>Co-ordinator - A/Prof Ann Chidgey</i>	Compulsory weekly attendance at Departmental seminar series (both semesters 1 and 2); compulsory attendance at MISCL Occasional Seminar Series for Guest Scientists from March to October.  2000 word essay based on one of the departmental weekly or guest Scientists seminars, delivered in week 1-6 of Semester 1. The topic must not be related to the student's Honours project topic. Student is expected to spend about 20 hours on this task.  Poster presentation. Students will prepare a poster on a publication related to their thesis literature review. Students will be expected to present and discuss their poster.	No assessment  60%; Submitted by end of Semester 1  40%; completed by end Semester 1
<b>Pharmacology</b>	Weekly Advanced Pharmacology Techniques Tutorials	No assessment. Weekly (Fri) from

<p><i>Co-ordinator – Prof Robert Widdop</i></p>	<p>Assessment of Data Exam (3 hours written)</p> <p>Journal Club (30 min oral presentation)</p> <p>Compulsory attendance at seminars</p>	<p>February- June</p> <p>50%; held in May (following techniques tutorial series)</p> <p>50%; held weekly from March – Aug</p> <p>No assessment</p>
<p><b>Physiology</b></p> <p><i>Co-ordinators – A/Prof Roger Evans, A/Prof Ramesh Rajan &amp; Dr Marianne Tare</i></p>	<p>Advanced Physiology Workshops: Staff and student led sessions for training in oral presentation of scientific ideas (including departmental seminars).</p> <p>Journal Club: Comprehension and critical evaluation of a scientific paper</p> <p>Scientific Writing Course</p> <p>Stress Management</p>	<p>62.5%</p> <p>37.5%</p> <p>No assessment</p> <p>No assessment</p>
<b>School of Psychology and Psychiatry</b>		
<p><i>Co-ordinator – Dr Penny Hasking</i></p>	<p>Compulsory attendance at the School of Psychology &amp; Psychiatry seminar series (semester 1) and compulsory attendance at selected seminars of:</p> <ul style="list-style-type: none"> <li>– The Monash Neuroscience &amp; Mental Health Network, &amp;/or</li> <li>– The Melbourne Neuroscience Seminar Series (held at the Howard Florey Institute).</li> </ul> <p>Assessed by a 100-150 word synopsis of 6 of the above seminars.</p> <p>Presentation of their research proposal at the School's 4<sup>th</sup> year proposal seminar series in early April.</p> <p>Presentation of a recently published paper in the field of Neuroscience (in an area unrelated to the student's research project) with an emphasis on the implications of the findings and potential future research.</p> <p>Students will also attend and satisfactorily participate in lab training, meetings, activities of one of the Neuroscience research labs of SPP.</p>	<p>20%; Due date - end of Semester 1 during mid-semester break.</p> <p>30%. Research proposal seminar series held in early April.</p> <p>50%; Due date - end of Semester 1 during mid-semester break.</p> <p>Satisfactory / unsatisfactory attendance and participation.</p>

<b>School of Public Health and Preventive Medicine</b>		
<b>Epidemiology &amp; Preventive Medicine</b>  <i>Co-ordinator – Dr Anna Peeters</i>	Completion of one semester distance subject (6 points): ECX9720 Epidemiology & Biostatistics  With 1 hour optional tutorial per week  Attendance at weekly departmental seminars (not compulsory)	50%; two assignments 50%; one open book exam
<b>Central Clinical School / AMREP</b>		
<b>Immunology</b>  <i>Co-ordinator – A/Prof Robyn Slattery</i>	Attendance at weekly departmental seminars.  Students choose to undertake one of up to 4 available modules. These modules are theory based modules in which they are asked to research current and relevant topics in immunology, pathology, virology, human disease or cell biology. The structure of the modules is flexible, but may involve lectures, tutorials, journal clubs and oral presentations by the students.	100%; 1500 word essay. (Some modules have an oral assessment component)
<b>Monash Institute of Medical Research / Southern Clinical School</b>		
<i>Co-ordinators – Dr Elizabeth Williams &amp; Dr Paul King</i>	Nine research seminars. Students must attend all seminars and submit a 100 word synopsis on each seminar (attached to the essay-see below).  Students are required to write a 1500-2000 word essay on one of the seminars from the list of essay topics provided by the seminar presenters.  Poster Presentation. Students are to take one of the original research papers used in their literature review and generate a poster presentation. At the poster presentation session students will be required to discuss their posters.	50%; essay  50%; poster presentation

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**Assessment Task 2: Common Core Component - Statistics Assignment**

**Due Date:** 4pm, Friday June 3, 2011

**Submission:** Assignments are to be submitted to the School of Biomedical Sciences Student Services office (bld 13C, room CG11). A completed assessment coversheet must be attached to your assignment.

**Details of task:**

Most students will need to perform statistical analyses of their data. When faced with this task students often realize their lack of understanding of statistical methods. The statistics component of the common core assessment is designed to provide students with a better understanding of statistical method. This component consists of a core of 5 lectures (two hours each), and two optional advanced lectures, which are held in semester 1 (March – May). Assessment (of the core lectures only) is by way of a written assignment to be set by the lecturer.

**Value: 30%**

**Estimated return date:** week of Monday 4<sup>th</sup> July.

**Assessment Task 3: Common Core Component – Written Critique**

**Due Date:** 1pm – 5pm, Wednesday June 8, 2011.

**Details of task:**

This will be based on a topic unrelated to the individual student research project. An article will be chosen from journals such as *Science*, *Nature*, or *The New England Journal of Medicine*, etc. A number of Journal articles will be provided to accommodate differing backgrounds and interests of students. Student will be given appropriate reading time in which to peruse the articles and decide which one to critique.

All articles will have the title and abstract removed. After you have made your choice of paper you will be asked to do the following:

- Provide a short 200 word summary/ abstract for the article
- Provide a title
- Write a critique by answering the designated questions
- Comment on the scientific significance of the article

You will have one hour reading time followed by three hours to complete the exam.

How should a written critique be approached?

Assume that the paper is still unpublished and has been sent to you by the editor of a journal to review. Don't be fazed by the fore knowledge that the paper has already been peer-reviewed (presumably by experts in the field) and subjected to tight editorial scrutiny. There are still many opportunities for critical appraisal of many published works.

Some questions that you should consider are:

1. Does the introduction to the paper clearly indicate the basis on which the ideas for the experiment(s) were developed?
2. Is there a clear hypothesis to be tested and are the aims clearly outlined?

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3. Does the study address the aims adequately?
4. Are the methods clearly explained? Could you easily repeat the experiments using the information on animals, experimental planning and techniques?
5. Are the results concisely described?
6. Are the statistical methods appropriate?
7. Does the discussion cover all the important aspects of the results and in particular place the data from the study within the context of previous studies?

This is only a guide to the types of critical questions you should be addressing and is not exhaustive!!

You need to write a brief background to the paper for context, explain the methods in enough detail to provide an understanding of experimental plan, outline the most important aspects of the results and explain why the data is important. A critical review doesn't mean that you need to be negative about the study. Point out where you think the science was good and why, but also, where appropriate, indicate any shortcomings of the study.

It is advised that you practice writing a critique. Several articles will be placed on the MUSO site for students to use as practice. Sample answers are also posted on the site. Try to set time limits to make the exercise realistic.

**Value: 30%**

**Estimated return date:** week of Monday 4<sup>th</sup> July.

### **Assignment submission**

All assignments will need to be submitted with an assessment coversheet. The coversheet is accessible on the BMS4100 Blackboard site via the Monash portal page located at <http://my.monash.edu.au>.

All students are reminded that they cannot plagiarise other peoples published work - see the section on plagiarism below. Students will be required to submit an electronic copy of their literature review which may be checked for plagiarism. Students may also be asked to provide electronic copies of other written work, including their thesis, if requested by the Honours Convenor.

### **Extensions and penalties**

Extensions to a deadline will not be granted unless a **submission for special consideration** is made. **Late submissions which have not been granted an extension will be penalised.** The mark will be reduced by 5% for each day past the submission date. Beware that 5% may not seem like a large amount to lose but the marks for the honours year are traditionally very close and a difference of a few marks can have a large affect on your ranking within the class and hence your chances of obtaining a scholarship for postgraduate study.

### **Special Consideration**

A student wishing to apply for special consideration should use the official university form to do this. Where possible, applications should be submitted prior to the assessment task due date.

Substantiating evidence such as doctor's certificates, report and signature from counsellor etc is required to support your claim. Any religious issues that may impact on a student's ability to meet deadlines should be identified and notified to staff ahead of time. A statutory declaration or note from a religious leader will need to accompany any special consideration on religious grounds.

The special consideration form can be downloaded from the Faculty website: <http://www.med.monash.edu.au/current/special-consideration.html>

### Process

1. Students are required to submit the special consideration application prior to the due date of the assessment task where possible, but no later than two University working days after the submission deadline for that piece of work.
2. Students are required to submit the special consideration application to the School of Biomedical Sciences Student Services Office:
  - Dr Joanne Waring, Student Services Manager, School of Biomedical Sciences Student Services Office (Building 13C, room CG11).
3. Special consideration applications will be reviewed by the Unit Convenor, Student Services Manager and the School/Departmental Honours Co-ordinator.
4. The student will be notified of the decision as soon as possible.

It should be noted that special consideration applications are considered on a case by case basis and that a mark adjustment shall not be made under any circumstances.

### Appeal process

Because of the importance of the Honours year to the student's future career paths, considerable care has been taken to ensure an objective assessment procedure. However, a student may protest in writing, outlining the reasons why he or she feels their grade is unfair. The Bachelor of Biomedical Sciences Management Committee will consider such an application. The appropriate School Representative/s will be asked to investigate the matter and report to the committee. The committee will return a verdict to the student. If the student is still dissatisfied they may wish to take the matter up with the Deputy Dean of Education (A/Prof Louise McCall), Faculty of Medicine, Nursing and Health Sciences.

## OTHER INFORMATION

### Policies

Monash has educational policies, procedures and guidelines, which are designed to ensure that staff and students are aware of the University's academic standards, and to provide advice on how they might uphold them. You can find Monash's Education Policies at: <http://policy.monash.edu.au/policy-bank/academic/education/index.html>

Key educational policies include:

- Plagiarism (<http://www.policy.monash.edu/policy-bank/academic/education/conduct/plagiarism-policy.html>)
- Assessment (<http://www.policy.monash.edu/policy-bank/academic/education/assessment/assessment-in-coursework-policy.html>)
- Special Consideration (<http://www.policy.monash.edu/policy-bank/academic/education/assessment/special-consideration-policy.html>)

- Grading Scale (<http://www.policy.monash.edu/policy-bank/academic/education/assessment/grading-scale-policy.html>)
- Discipline: Student Policy (<http://www.policy.monash.edu/policy-bank/academic/education/conduct/student-discipline-policy.html>)
- Academic Calendar and Semesters (insert URL);
- Orientation and Transition (insert URL); and
- Academic and Administrative Complaints and Grievances Policy (<http://www.policy.monash.edu/policy-bank/academic/education/management/complaints-grievance-policy.html>)

### **Student Services**

The University provides many different kinds of support services for you. Contact your tutor if you need advice and see the range of services available at [www.monash.edu.au/students](http://www.monash.edu.au/students)

The Monash University Library provides a range of services and resources that enable you to save time and be more effective in your learning and research. Go to <http://www.lib.monash.edu.au> or the library tab in my.monash portal for more information.

Students who have a disability or medical condition are welcome to contact the Disability Liaison Unit to discuss academic support services. Disability Liaison Officers (DLOs) visit all Victorian campuses on a regular basis

- Website: <http://adm.monash.edu/sss/equity-diversity/disability-liaison/index.html>;
- Telephone: 03 9905 5704 to book an appointment with a DLO;
- Email: [dlu@monash.edu](mailto:dlu@monash.edu)
- Drop In: Equity and Diversity Centre, Level 1 Gallery Building (Building 55), Monash University, Clayton Campus.

### **Occupational Health and Safety**

#### **Faculty OHS&E consultant**

Dr Bernadette Hayman ext. 55739  
[bernadette.hayman@med.monash.edu.au](mailto:bernadette.hayman@med.monash.edu.au)  
Building 64, Room 108

#### **OH&S Websites**

OHS induction: <http://www.adm.monash.edu.au/ohse/assets/forms/safety-induct-employees.pdf>

Hazard/Incident reporting:  
<http://adm.monash.edu.au/ohse/assets/forms/hazard-incident-report.pdf>

- Hazard and risk management

<http://www.adm.monash.edu.au/ohse/assets/docs/others/risk-control-program.doc>

- **Ergonomics & Manual handling**

Adjusting your chair:

<http://www.adm.monash.edu.au/ohse/ergonomics/office-chair.html>

Computer user guidelines:

<http://www.adm.monash.edu.au/ohse/assets/docs/guidelines/computer-user-guide.doc>

- **Biosafety & OGTR**

<http://www.monash.edu.au/researchoffice/biosafety/>

- **Monash OHS documents**

<http://www.adm.monash.edu.au/ohse/documents/index.html>

Procedures:

Using chemicals at Monash

Using biologicals & animals at Monash

Information sheets:

Phenol

Syringes, needles & syringe barrels – use & disposal

Thermal comfort

Hazard alerts:

Heating of magnetic stirrers/hotplates

Liquid nitrogen: risk of asphyxiation

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## APPENDIX

### Role of Supervisors

#### **Guidelines for supervisors**

Supervisors will participate with students in the design of experiments and the interpretation of data. Supervisors should interact freely with their students in the writing of the literature review. The final thesis should however, be a product of the students, not the supervisor. Students should discuss the plan of their thesis with their supervisor and may submit a first draft for review by the supervisor no later than two weeks before the final submission deadline. Supervisors are encouraged to ask students to prepare a detailed description of their work for review prior to preparation of the final thesis. Supervisors are also encouraged to give students an opportunity to practise their seminar presentation prior to the first and second seminars.

#### **Responsibilities of supervisors**

To provide academic guidance concerning the nature and practice of research:

1. through an introduction to the relevant literature and opportunities for its critical appraisal,
2. by assisting the student to understand the rationale behind the development of his/her project,
3. by instructing the student in the appropriate experimental techniques,
4. by assisting the student in the planning of experimental protocols and appropriate statistical analyses,
5. by assisting the student in the critical analysis and interpretation of experimental data,
6. by assisting the student to develop his/her oral and written communication skills.

#### **Conditions for Comment by Supervisors on Literature Review and Thesis Drafts**

Supervisors should interact freely with their students in the planning of the literature review and thesis. Students and supervisors should plan together the layout of the literature review and thesis, the disposition of figures, etc. They should advise, but leave to the student, decisions about data interpretation, etc. Students should then prepare a first draft. Students may submit one draft only of the literature review and thesis for comment by their supervisor(s). The supervisor can edit hard copy of this first draft but only very broadly. Grammar, spelling corrections, and other typographical errors are the responsibility of the student. Supervisors should NOT CIRCULATE draft versions of the review and thesis to staff, other than the co-supervisor, for detailed comments. Supervisors and co-supervisors must comment on exactly same version of the review and thesis. Supervisors should never write any part of the review and thesis themselves. Supervisors are not permitted to edit the literature review and thesis draft using track changes. This is important since the review and thesis must be original work that is clearly identified as the student's effort and not that of the supervisor. Note that drafts cannot be circulated by the student to any other staff members, postdoctoral fellows, research assistants or to postgraduate students. Note that supervisors and co-supervisors will not be examiners of the literature review and thesis written by their own students.

Students and supervisors should note the thesis dates. These conditions have been introduced to ensure:

- (1) that students plan and complete their thesis preparation well ahead of the submission deadline,
- (2) that supervisors are not confronted by the prospect of having a thesis to read and comment on for the first time the evening before the submission deadline, and
- (3) students reserve sufficient time prior to submission to complete the final details of thesis preparation which often require much more time than expected (eg. checking references,

writing figure and table captions, preparing final diagrams etc.). The above conditions must be strictly adhered to by all those involved in the course.

### **Absences of Supervisors**

In the event that supervisors are absent from the University for an extended period of time during the year, or are not able to provide the above assistance during any part of the year, it is important that they inform the Biomedical Science Honours Course Convenor and organise an alternate source of assistance for the student in good time.

### **Guidelines for co-supervisors**

Each student should have a Co-supervisor wherever possible. Co-supervisors are requested to meet with the supervisor and student to discuss the project at an early stage. It is recommended that this group should meet whenever necessary to discuss a variety of matters including:

- (a) approach to the project,
- (b) preparation for seminars,
- (c) discussion and interpretation of results,
- (d) preparation of thesis.

Co-supervisors should also assist their students to gain access to facilities not generally available in their working environment.

It is hoped that students will contact both their Supervisor and Co-supervisor in times of difficulty. Co-supervisors should be aware of the "Guidelines for Supervisors", particular attention should be given to the sections dealing with "Preparation of Seminars" and "Preparation and Writing-up" of thesis.

Co-supervisors may wish to provide either an independent final assessment of the student, or submit a consensus view in combination with the Principal Supervisor.