The John Curtin School of Medical Research

Honours/Masters Research Handbook

2021

Medical Research Honours Program (MEDN4001)

Masters Medical Research Project (MEDN8701)

Information for Students, Supervisors, Advisors & Examiners

Contents

ADMINISTRATION OF MEDICAL RESEARCH TEACHING

The Medical Research Honours Convenor and Committee oversees the teaching of the Medical Research Honours Course (MEDN4001) and the Masters Medical Research Project (MEDN8701).

All applications for the Medical Research Honours program are approved by the Sub-Dean after endorsement by the Honours Convenor.

The academic aspects of the program are overseen by the Convenor and in support are the JCSMR Honours Committee.

The Associate-Director (Education) JCSMR oversees teaching at JCSMR and should be approached only if you have a concern that you do not think can be addressed by the committee or the convener.

The day-to-day coordination of the program is through the JCSMR Student Administration Office. The College Science Enquiries team also provide administration for the program. The first point of contact for administrative support should be the JCSMR student administration team

Convenor

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Honours committee members

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JCSMR Location

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INTRODUCTION

The Honours/Masters research year is challenging, but as your first experience of scientific discovery, students usually find the experience exciting and incredibly rewarding. The research year can be the first chance to be part of a laboratory group doing cutting edge science and provides the opportunity to become a valued member of the scientific community.

You will develop skills in laboratory-based research, inductive reasoning, literature analysis, written and oral communication, which will help to launch a career in Biomedical Research or a related field. We trust you will have a fabulous year at The John Curtin School of Medical Research (JCSMR), full of discovery and inspiration, both academically and personally, and will develop a great enthusiasm for Biomedical Research.

If you have any questions, the Course Convenor and Student Administration Offices will assist you in any way they can. Please let us know as soon as possible if you encounter any problems or difficulties.

PROGRAM OUTCOMES

Upon successful completion, students will have the knowledge and skills to:

1. Plan and engage in an independent medical research investigation;
2. Systematically evaluate evidence and draw appropriate conclusions;
3. Analyse and interpret medical research data with statistical or other evaluative processes;
4. Demonstrate mastery of relevant experimental techniques to collect original research data;
5. Communicate data and complex research concepts clearly and effectively to a variety of audiences.

COURSE REQUIREMENTS

Program requirements and set dates are outlined in the Program Timetable at Appendix 1.

The Program consists of compulsory graded and non-graded Milestones and other compulsory activities:

The final grade will be determined by three components:

Milestone 1: Research Project Proposal	Ungraded
Milestone 2: Seminar on Research Project and First Meeting with Advisor	Ungraded
Milestone 3: Journal club presentation	**15%**
Milestone 4: Submission of First Draft of Thesis	Ungraded
Milestone 5: Research Thesis and Defence	**75%**
Milestone 6: Final Research Seminar	**10%**
Total	**100%**

Other Compulsory Activities

a) All required safety and induction courses.
b) Attendance at additional courses and workshops as outlined in the Timetable.
c) Attendance of Directors Seminars if based at JCSMR
d) Attendance of relevant Department Seminars as directed by the supervisor
e) Attendance of the relevant Department Journal Club Program

MILESTONES

Milestone 1: Research Project Proposal – Ungraded

This is written by the student in consultation with the Supervisor, prepared in the style of a research grant application. The Research Proposal should comprise two sections: A) Research Proposal and B) References, as outlined below. The proposal should be submitted as a single PDF file (containing both Section A and B) via WATTLE and also sent by email directly to the Supervisor and the Advisor. Draft proposals can be reviewed by the supervisor. The final proposal will be read by the Advisor who will provide written feedback within 3 weeks.

Section A - Research Proposal (max 9 pages)

Your Research Proposal should provide enough information so that the research approach can be assessed. It should include the following:

Component	Properties
Hypothesis and Aims	Describe the specific aims of the project, including a clear statement of hypotheses to be tested.
Background/Literature Review	Provide some background information on the state of the field and a rationale for the project.
Research Plan – methods and techniques to be used	Outline the research plan in detail, including the following where appropriate: • detailed description of the experiment design • techniques and system to be used • details and justification of controls • details for appropriate blinding • expected outcomes of the research project.
Timeline	Provide a detailed timeline for the expected outcomes of the Research Proposal.
Outcomes and Significance	Describe the importance of the problem to be researched, the planned outcome of the research plan, and the potential significance of the research.

Section B - References (max 2 pages)

References for the Research Proposal must:

a) not exceed 2 pages
b) provide a list of all references cited in the application in the style used by the Journal Cell. For example:
   - **In-text citations: S**hould be written in Harvard style and not numbered, e.g., "Smith et al., 2015; Smith and Jones, 2015."
   - **Journal articles**: Sondheimer, N., and Lindquist, S. (2000). Rnq1: an epigenetic modifier of protein function in yeast. Mol. Cell 5, 163–172.
   - **Books:** Cowan, W.M., Jessell, T.M., and Zipursky, S.L. (1997). Molecular and Cellular Approaches to Neural Development (New York: Oxford University Press).Background/Literature Review
c) only include references to cited works.

Format of the Research Proposal

The Research Proposal should be formatted according to the requirements outlined in the table below.

Component	Requirements
File format	The Research Proposal must be saved and uploaded as a Portable Document Format (PDF) file
File size	The PDF file MUST NOT exceed 2Mb in size.
File name	The PDF file must be named using the following: "Student's Surname_Honours2019_Research Proposal.pdf" Eg. "Smith_Honours2019_Research Proposal.pdf"
Page size	A4
Page margins	Right/Left margins: min 2cm; Top/Bottom: min 1cm
Page limits	Section A: Research Proposal, 9 pages Section B: References, 2 pages
Header	Student's surname must be included in the header. Project title (or short/running title) must be included in the header. e.g. "Smith - Identifying stress factors in Honours students"
Footer	Page number must be included in the footer.
Font	A minimum of 12-point font must be used, in a readable style such as Times New Roman or Arial. Figures and figure legends may use 10 point font.
Line spacing	Single
Language	English

Milestone 2: Seminar on Research Project, First Meeting with Advisor - Ungraded

All students will present a seminar outlining their proposed research (12min + 3min for questions). All students will present their seminar to the whole school. The seminar should outline the project to be undertaken and the background literature.

It is recommended that the supervisor and advisor attend if possible. Attendance at all talks is compulsory for all Honours students.

Separately all Honours students will have a meeting with the advisor. If the advisor was not able to attend the seminar the Honours student should present their talk to the advisor. A form (Appendix 2) will be provided to sign off that this meeting has happened.

Milestone 3: Journal club presentation – 15% of total Mark

Students will attend the relevant Department Journal Club Program at JCSMR throughout the year as directed by their Supervisor. A journal article will be assigned by the Honours committee representative from that department for each student for presentation at the Journal Club **3 weeks ahead** of the scheduled date.

Journal articles will be cutting edge, substantive, original research papers (not Reviews) appropriate for the relevant Department's Journal Club with regard to research topic. The paper should not be immediately relevant to the student's project. The student will also be expected to provide an annotated bibliography discussing 5 related articles and their relevance to the paper being presented.

The student may have one practise run through the talk with the supervisor, and the supervisor (or suitable substitute e.g. advisor/senior post-doc if the supervisor is away), should make themselves available if the student requests this. The presentation will be scheduled as part of the relevant department's regular journal club.

The journal club presentation should be around 30 minutes if delivered without interruption. However, it is expected that there will be questions and discussion throughout the talk, so a journal club should typically take 45 minutes in total, but should not exceed 1 hour.

A panel of at least 4 examiners, from the academic staff coordinated by the Honours committee representative will discuss and mark the journal after the presentation according to the provided rubric (Appendix 3).

The slides and annotated bibliography should be uploaded to **WATTLE** by 5pm the day before the Journal club. Note while you should use PowerPoint or similar for the presentation when uploading the slides to wattle use a pdf format (total file size <10MB) to facilitate circulation among examiners.

Your supervisor/Honours committee representative will provide you with oral feedback on the day of your presentation upon request. You will receive an indicative mark at the end of the semester, note however that such marks are provisional and may be moderated subsequently before you receive your final mark at the end of the year.

Milestone 4: Submission of First Draft of Thesis - Ungraded

As a guideline, students should aim to have **completed all laboratory work approximately 7 months after the beginning of the program** to enable **writing of the thesis to commence approximately 6 months in**.

The first draft of the thesis should consist of an **Introduction, Methods, and Results** section. Supervisors should make detailed corrections to this first draft.

Milestone 5: Research Thesis (5A) and Defence (5B) - 75% of total mark

The major component of the JCSMR Honours year is the Thesis and Defence. The thesis is the formal write-up of your research project. After thesis submission, an oral discussion (defence) of your work is held with your examiners; your supervisor will arrange a time and venue for this. The thesis and defence are not given as separate marks; the defence is used as an aid in assessing the thesis and an overall mark is given to "thesis plus defence".

Submission of Thesis (5A)

All Honours thesis must be submitted **by 5 PM of the set date as outlined in the Program Timetable (Appendix 1)**, via electronic copy submitted to the **College WATTLE** (Not JCSMR) web site in Portable Document Format (PDF).

Your thesis is the culmination of your research. You should write your thesis for **general biologists** rather than specialists in your field. Examiners are much more impressed with quality than quantity; copious data – even if publishable – by themselves do not guarantee a high grade. Aim for a well-written and well-argued thesis rather than trying to present too much. In other words, tell a coherent story. Examiners are looking for evidence of clear understanding in the design and interpretation of your research.

Presentation of the thesis is very important. Workshops, provided by ANU Academic Skills, on writing different sections of the thesis will be held prior to submission date (see Timetable for dates), in which you will be given detailed advice on the format of the thesis, its preparation and how it will be assessed. In addition, ANU Academic Skills offers individual appointments and online resources on academic writing skills; we strongly encourage you to use these resources.

The use of correct statistical methods is also essential and will be assessed. All students are expected to attend the compulsory Statistics course at the beginning of the program and the statistics/data analysis workshop later in the program (students are invited to volunteer their own data for analysis as part of the workshop).

A student will be penalised for late submission of the thesis as follows:

1) Theses submission is required by 5pm on the day stated in the Program Timetable. Submissions after the deadline will be penalised 5% of the maximum course mark per working day late thereafter. E.g. If the deadline is 5PM Thursday, submission after that time until Friday 5PM will be penalised 5%. A submission on Monday will be penalised 10%, Tuesday 15%, etc.
2) Extensions will only be granted in exceptional circumstances, where students can document unforeseen circumstances that have impacted their ability to submit on time. The Convenor may approve any extension of up to two weeks. Extension of time to submit beyond two weeks after the completion date will be subject to the approval of the College Deputy Dean Education on the recommendation of the Honours Convenor or Associate Director Education.
3) No applications for extensions will be accepted on or after the due date.
4) Extensions will only be granted if all the milestones have been met.

Thesis Format

The thesis must respect the following format:

- Printing: double-sided A4 paper
- Font: Times, 12 point
- Spacing: 1.5 lines
- Margins: Mirrored, 3 cm on the inside (bound edge); others 2 cm
- References should be in an author-date style not a numbered style. A penalty of 2% will apply for using a numbered reference style.
- Text limit: 10,000 words excluding Abstract, Methods, References, Figures (and legends), Tables and Appendices. Provide the word count of the Introduction, Results and Discussion chapters on the Title Page of the Thesis. There will be a penalty of 5 marks deducted from the thesis mark for theses >5% over the word limit (10,500 words), with an additional 1 mark deducted for every 100 words over 10,500 words. These page/text restrictions should be viewed as upper limits and not goals. You should strive to write as succinctly as possible. Do not use Appendices for important information that should appear in the Methods or Results. As noted below, examiners are not required to read the Appendices. Organisation of the thesis within these limits is up to you, and depends to a large extent on the nature of the project – however, the thesis should contain a clearly-identified final Discussion chapter (see below). Consult your supervisor(s) and the guidelines below for structuring your thesis.

Guidelines for thesis structure

The thesis should include:

- **Title Page** (including word count)
- **Table of Contents**
- **Acknowledgements**
- **Abbreviations**
- **Abstract** - should briefly describe the background to the project, hypothesis, aims, methods, results and conclusions, with the emphasis being on results.
- **Introduction** - should give the background and reasons for the research. It should establish the experimental hypotheses and outline the experimental approach being used. Your Research Proposal will be helpful in composing an Introduction.
- **Methods** - should be presented in the briefest possible form consistent with a description enabling repetition of the work by others. Detailed accounts of published techniques should not be included, but if a description of the fine details of techniques is necessary this should be included in Appendices (see below). This chapter should include concise descriptions of study organisms, locations and study sites, and other relevant information on procedures. Where modifications to published methods were used, these should be presented formally, in journal style, and should include compositions of the solutions used. Laboratory jargon should be avoided.
- **Results** - should summarise the main findings. Results should be presented in the text, with reference to Figures and Tables as appropriate. The Results should also include analyses of the data and the conclusions that you can draw from the analyses. Results should not include comparison with other people's work, nor comments on the wider significance and applicability of your work (this is done in the Discussion).
- **Discussion** - should draw all observations and experiments together, stating the main findings, pointing out their significance, drawing conclusions from them and relating these back to the original aims and hypotheses. This is also the place where the findings should be related to other people's published work as described in the Introduction, and where suggestions for future research should be offered.
- **Figures** - should be embedded in the appropriate chapter, be numbered and Figure legends placed below the figure. Figure legends should include a title and explanatory information (including abbreviations) enabling the figure to be understood without referring to the text. Figures may be embedded within the text or occupy their own page. For any figures presenting pooled data, the measures should be defined in the figure legends (for example, "Data are represented as mean ± SEM."). Notation of statistical significance (usually an asterisk) and test used should be clearly described in the figure legend according to the convention.
- **Tables** - should be embedded in the appropriate chapter and be numbered. Tables should include a title, and any footnotes and/or legend should be concise. If bold, italic or coloured font is used within a table to indicate some feature of the data, please give an explanation of its usage in the legend. All abbreviations within a table must be defined in the table legend or footnotes. Footnotes should be listed with superscript lowercase letters, beginning with "a."

A maximum of 2 drafts of the thesis can be read by the Supervisor before submission of the Final Thesis. The Discussion should not be read nor commented on by the Supervisor, however, the content of the Discussion can be discussed with the Supervisor.

Thesis Defence (5B)

The defence is used as an aid in assessing the thesis and determining the overall mark. Two examiners will receive copies of the thesis; the examiners will read and mark the thesis individually. The defence typically would commence with the student being asked to provide a brief 2 min overview of a key outcome of their project. The two examiners will then ask questions about sections within the thesis in order to clarify any potential issues or determine the depth of understanding.

The overall thesis mark will be the average of each examiner's marks (not a consensus). Typically, one examiner will be a member of your department who may be expected to be familiar with the research area, however the second examiner may be from outside your department, thus your thesis should be accessible to a "non-expert". The marking rubric is provided in Appendix 4.

Where possible, a moderator from the Honours committee or their delegate will also sit in the defence to ensure consistency.

The supervisor may also sit in the exam if the student and supervisor collectively agree. The supervisor should not partake in the exam. The supervisor however is required to be available at the conclusion of the exam to provide feedback about research performance throughout the year.

If the examiners marks differ by 8% or more, then the thesis will be marked by a third person, to be chosen by the Honours committee (excluding any individuals who may have conflicts e.g. the supervisor or advisor of the student). The final mark for these students will be the average of the closest two marks, or if they are equally spread, the top two marks. All marking, including that by the third examiner (if necessary), must be completed before the examiners meeting.

The thesis mark, plus all other marks given for assessable work, will be collated by the Course Convenor and a grade of Honours awarded according to the Grading Criteria (below). Following the Honours examiners meeting the final grade will be endorsed by the examiners committee and approved by the Associate Director (Education) JCSMR.

Milestone 6: Final Research Seminar - 10% of total mark

Students will present the outcomes of their project in their Final Research Seminar (12 min talk, 3 min discussion). It is recommended that students rehearse these talks with their supervisors, paying particular attention to the time limit which will be strictly enforced: **there will be a 5% penalty applied to the seminar mark for talks that go more than 2 minutes over time.** A research seminar workshop will also be provided.

A seminar schedule will be circulated closer to the date. Grades will be based on your presentation skills, including discussion of the research background, critical analysis and presentation of your data, understanding of your research in the context of the field and ability to answer questions. The final seminar will be marked by a panel consisting of members from all departments and so should be accessible to broad scientific audience. The marking criteria is provided in Appendix 5.

You will receive an indicative mark within 1 week of the final seminar. If you wish for further feedback you should approach your department representative shortly after the seminar. Note the grade you receive is provisional and may be moderated subsequently.

GUIDELINES FOR AWARD OF GRADES

Grading Criteria

The following criteria are used to assess the quality of theses and to assign grades. The committee will ask the supervisors to comment on whether the students have demonstrated some of these characteristics; while the judgement on other characteristics will rely purely on the thesis and defence.

Honours/Masters III 50-59%:

The student has:

- demonstrated some knowledge of the relevant background literature, but with serious gaps, and limited understanding;
- applied relevant techniques and carried out research work, but needed considerable assistance and showed limited understanding of the procedures employed;
- presented the results, though in a somewhat muddled and/or incomplete way.

Honours/Masters IIB 60-69%:

As for Honours/Masters III, but in addition, the student has:

- demonstrated a reasonable knowledge of the relevant background literature, with only a few gaps, albeit in a somewhat uncritical way;
- demonstrated that they had learned many of the relevant skills (which might include laboratory techniques, computer programming and statistical analysis);
- presented the results in an appropriate format, and communicated them effectively.

Honours/Masters IIA 70-79%:

As for Honours/Masters IIB, but in addition, the student has:

- demonstrated a thorough knowledge of the relevant background literature, though still with limited critical appreciation;
- demonstrated reasonable technical mastery of all the relevant skills;
- worked hard, efficiently and carefully;
- presented the results and/or data clearly and succinctly.

Honours/Masters I 80-89%:

As for Honours/Masters IIA, but in addition, the student has:

- critically analysed the relevant background literature rather than merely summarising it;
- demonstrated a clear appreciation of how their work fits in to the larger field of research;
- demonstrated considerable technical mastery of all the relevant skills;
- shown some appreciation of the limitations of the experimental design or techniques used and outlined future research directions that are feasible;
- put forward their own useful and valid ideas relating to the project;
- further demonstrated the ability to see, and take, the logical next step without excessive 'prodding', the ability to act independently of the supervisor's immediate direction and presence, but the maturity to know when the supervisor's help is necessary;
- demonstrated the persistence and ability to carry on under difficulty;
- picked up new concepts and skills rapidly;
- showed the ability to work effectively in the presence of others.

Honours/Masters I >90%:

As above, but in addition, the student has:

- obtained concepts and procedures independently from the literature and at least discussed a use for them in the study;
- demonstrated impressive technical mastery of all the relevant skills;
- demonstrated a good understanding not only of the techniques they employed, but other alternative techniques and the reasons for choosing between them;
- outlined possible future directions which are not merely feasible but which show considerable originality;
- not only put forward useful and valid ideas relating to the project.

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

TEACHING ROLES

ROLE OF SUPERVISOR

The Primary Supervisor of the research project is the principal mentor and academic adviser for the student. The primary supervisor will be an academic member of ANU staff with a primary interest in medical research. The Honours supervisor does not have to be based at JCSMR, however the student will be expected to participate in activities - in particular journal clubs and seminars - organised through JCSMR. If the supervisor is a junior academic (level A or B) or has not supervised any Honours students to completion previously a suitable second supervisor of academic level C or above will be required. A second supervisor may also be appropriate in other cases, e.g. collaborative or cross-disciplinary projects. PhD students may assist Honours students and oversee individual experiments; however, PhD students cannot act as the supervisor or co- supervisor for a student even in an unofficial capacity. All supervision arrangements are subject to approval by the Convenor and relevant Head of Department.

Students are encouraged to consult others within the Supervisor's group or outside that group. Ideally, the relationship between Supervisor and student is one of mutual respect and trust, and is friendly and constructive. Regular contact between Supervisor and student should be maintained either by informal or formal arrangements initiated by either person. Supervisors vary in the amount of time they have available for a student and how much advice and material aid they give; similarly, students vary in their needs. It should be kept in mind that Supervisors have many other duties and may not be able to resolve a problem immediately as itarises. Supervisors are expected to provide students with laboratory and intellectual environments that enable the students to reach their full scientific potential. Specifically, supervisors are expected to give students support in the following areas:

1. Supervisors are expected to arrange adequate working facilities for the student - **desk and access to a computer** - and should carry the normal expenses associated with a research student.
2. Supervisors are expected to **closely follow the progress of the student**, and should try to be available to deal with any questions and problems that the student may have as soon aspossible.
3. Supervisors are expected to teach the student how to use any specialised computer software that is essential for completion of the project. In addition, the supervisor should ensure that the student is taught (in a timely fashion) how to use PowerPoint (for seminar presentations) and any drawing packages that facilitate presentation of information for the seminars or thesis. **Note: The production of diagrams for seminars and the thesis is the responsibility of the student and should not be done by anyone else; however, some useful diagrams may have been prepared by other members of the laboratory and these may be used by the student, if all parties agree and the source is fully acknowledged.**
4. Supervisors are expected to ensure that statistical analysis of data is appropriately undertaken.
5. Supervisors are expected to assist students to meet the following deadlines:
   a) **Milestone 1 - Research Project Proposal:** Assist with preparation of the Research Project Proposal
   b) **Milestone 2** - **Seminar on Research Project, First Meeting with Advisor:** Assist with the preparation of the Research Seminar on the proposed project. Supervisor and Advisor should attend the presentation if possible. Assist with organizing the meeting with the student advisor.
   c) **Milestone 3 – Journal Club Presentation:** Assist with preparation for Journal Club presentation. Advise students that they must attend the relevant Department Journal Club Program at JCSMR throughout the year. Ensure the slides and annotated bibliography are submitted 5pm the day prior to the Journal club presentation.
   d) **Second Advisor Meeting** – Assist with arranging and ensuring completion of the Second Meeting with Advisor
   e) **Milestone 4: Draft Thesis** – Supervisors should ensure that the student meets this deadline by finishing their experimental work when required, and by discussing the thesis structure and monitoring writing progress. Supervisors should provide the necessary software and know-how for the student to produce high quality figures and should strongly encourage regular back-ups. The Supervisor should provide detailed feedback on the first draft following submission (or earlier, if agreed by student and Supervisor, keeping in mind that only 2 drafts can be reviewed by theSupervisor).
   f) **Milestone 5: Thesis submission** - Supervisors should closely monitor the students to ensure they meet this crucial deadline, including by providing their own feedback on the first and second draft to the student in a timely manner. Maximum of 2 drafts can be read by the Supervisor before submission of the Final Thesis. The Discussion should not be read and commented on by the Supervisor, however, the content of the Discussion can be discussed with the Supervisor.
   g) **Milestone 5: Thesis Defence -** Supervisors should arrange the date and time for the thesis Defence and provide assistance to prepare the student for the Defence. As a guideline the supervisor should provide information on the format of the Defence and the types of questions that are generallyasked.
   h) **Milestone 6: Final Seminar** - Supervisors should provide support to the students in preparing their seminars and rehearse the seminar with the students, keeping in mind the time limit (12 min talk) which will be strictly enforced.

ROLE OF HONOURS ADVISOR

An Advisor is appointed to facilitate student progress during the year. They are **not** a mentor or academic adviser. A person offering significant scientific advice would generally be more appropriate as a co-supervisor rather than an advisor. The advisor will be appointed by the Honours committee.

The advisor checks the following:
a) the research project appears to be feasible and is within the capabilities of an Honours student
b) the Supervisor is meeting their obligations and dealing with the student in a fair and friendly manner
c) if necessary alternative research strategies are pursued before too much of the year elapses
d) the student is making adequate progress with respect to reading of the background literature
e) submission of the thesis is on time

In other words, the Advisor should be viewed as a supporter and confidante of the student and will help resolve any difficulties that might arise between the student and Supervisor. Therefore, the Advisor assigned to the research project is the first port of call for student support. The advisor may also facilitate requests for specific consideration. If you feel that that the advisor is not able to give independent advice or is conflicted in a specific instance, then do not hesitate to contact the Department specific Honours Committee Representative or the Honours Course Convenor.

The second port of call is the Department specific Honours Committee Representative or the Honours Course Convenor. **Students should not hesitate to use these support systems if problems arise with respect to supervision.**

Advisors must participate in the following deadlines:

a) **Milestone 1 – Research Project Proposal:** Advisors should provide written feedback on the proposal in a timely manner (within 2 weeks, noting that this time period may coincide with School holidays).
b) **Milestone 2 - Seminar on Research Project, First Meeting with Advisor:** Seminar on proposed project and meeting with the advisor. A form will have to be signed to confirm this meeting has taken place.
c) **Second Advisor Meeting –** Second Meeting with Advisor (Arranged by Supervisor)

Advisors are to provide comments on the Thesis

The advisor can give advice on a **single draft of the thesis**. This must be one of the two drafts submitted to the supervisor. The advisor must undertake to provide general feedback to the student, which could include comments on the readability of the thesis by a non-expert, keeping in mind that one of the examiners will be a non-expert in the field of the research.

ROLE OF EXAMINERS

Two Examiners will be selected by the Honours Committee, and agree to participate as examiners, at the start of the year. The Examiners play no role until the thesis has been submitted. Students will not know who their examiners are until the thesis defence. The Examiners will provide a combined mark for the thesis and thesis defence that contributes 75% of the total mark for the year. This mark will be the average of marks (not a consensus) given by two examiners.

OTHER INFORMATION

INDICATIVE TIMELINE

Submission dates and additional dates for induction, training, courses, and workshops are detailed in the Timetable at (Appendix 1)

FIRST SEMESTER	Welcome and Induction
	Lab inductions and safety training
	Academic Skills Workshops
	Milestone 1 - Project Proposal Submission
	Statistics Training
	Seminar on proposed research project
	Milestone 2 - First Meeting with Advisor Due
	Milestone 3 - Journal club presentation
SECOND SEMESTER	Data Analysis workshops
	Second Meeting with Advisor
	Academic Skills Workshops
	Milestone 4 - Submission of First Draft of Thesis
	Milestone 5 - Final Thesis and Oral Defence Due
	Final Seminars

SAFETY

Students should have a safety induction to the building in which they work, and in addition a Laboratory induction if required. All students working within a PC2 Laboratory environment will undertake biological and chemical safety training, and if relevant, radiation, laser and OGTR training will be provided.

AFTER-HOURS ENTRY

JCSMR - Students located in JCSMR require an induction and security access to enter the building. This will be organised at the induction session. If you require after-hours access this will need to be signed off by your supervisor following JCSMR procedures in addition to standard induction.

Other Buildings - Students located in other buildings should consult their Supervisors about after-hours entry.

COMPUTING FACILITIES

Supervisors are expected to provide computers for word processing and data analysis. Any difficulties in this regard should be referred to the JCSMR Honours Committee Representative or to the Course Convenor.

TIME MANAGEMENT

Learning how to manage your time well is critical and this means good forward planning: setting clear interim goals, leaving plenty of time for preparing reports, seminars and, especially, the thesis.

When running experiments in the laboratory or doing computational work, you may find that your hours are not the normal nine to five, five days a week. In research, work hours are determined by the type of work being conducted. If you work consistently and manage your time well, you should be able to maintain a healthy workload. This also means taking reasonable time away from the university e.g. up to two weeks holiday can be taken, in consultation with your supervisor.

In fact, you are strongly encouraged to take regular breaks to help to ensure your own well-being, which will ultimately benefit the quality of yourthesis.

If you find you are having problems with maintaining work hours that are acceptable to you, discuss the issue with your supervisor(s), your Department Committee member, or theConvenor.

COUNSELLING AND MENTAL HEALTH SUPPORT

The first point of contact if you encounter health issues is your Supervisor and/or Advisor. Further to this you can contact the Student Administration team or the Honours Convenor.

Information on Health, safety and wellbeing for students and contacts for Counselling and Mental Health Support can also be found in the link http://www.anu.edu.au/students/health-safety-wellbeing

DATA FABRICATION, FALSIFICATION & PLAGIARISM

The falsification of results gained towards your Honours work is a serious offence and will not be tolerated. It is essential that students maintain a careful written record of experimental procedures and results. The copying or summarising of another person's results or ideas as if they were one's own is a form of theft and will not be tolerated. The source of such material must always be cited in the text and bibliographies of your written work. University policy and processes concerning data fabrication, falsification and plagiarism are covered by:

- the 'Code of Practice for Student Academic Integrity' (https://policies.anu.edu.au/ppl/document/ANUP_000392),
- the 'Discipline Rules 2014' (http://www.comlaw.gov.au/Details/F2014L01792),
- the 'Code of Practice for Teaching and Learning' (https://policies.anu.edu.au/ppl/document/ANUP_000726), and
- the 'Academic Honesty and Plagiarism' (http://academichonesty.anu.edu.au/).

Penalties for such offences may include failing, reduction in the final mark of the course or other penalties as described in the policy above. A single opportunity will be given to scan your text using the plagiarism detection software before submission. Specifics will be released closer to the time. The Course Convenor may reserve the right to scan the thesis or parts thereof after submission.

ANIMAL EXPERIMENTS

The University requires **all** experiments on animals to be approved by a Committee which it has set up to meet animal welfare regulations in the ACT, in order to prevent cruelty to, and unnecessary use of, animals. **Students must undertake the appropriate animal ethics and animal handling training, and must be co-signatories on the relevant protocol** that has been approved by the Animal Experimentation Ethics Committee. The term 'experiment' is interpreted very widely and includes observations on animals in the laboratory and handling animals in the field.

HUMAN EXPERIMENTS

Consult your supervisor about ethics approval to undertake experiments with humans.

Milestone 2: First meeting with Advisor sign off sheet

Student Name: Student ID:

Advisor Name: Date of Meeting:

Advisor Meeting guide:

a. Does the research project appear to be feasible and within the capabilities of an Honours student?
b. Is the Supervisor meeting their obligations and dealing with the student in a fair and friendly manner?
c. If necessary, are alternative research strategies being pursued before too much of the year elapses?
d. Is the student making adequate progress with respect to reading of the background literature?
e. Is submission of the thesis tracking to be on time?

Advisor Comments:

Advisor Signature:

Student Comments:

Student Signature:

Second meeting with Advisor sign off sheet

Student Name: Student ID:

Advisor Name: Date of Meeting:

Advisor Meeting guide:

a. Does the research project appear to be feasible and within the capabilities of an Honours student?
b. Is the Supervisor meeting their obligations and dealing with the student in a fair and friendly manner?
c. If necessary, are alternative research strategies being pursued before too much of the year elapses?
d. Is the student making adequate progress with respect to reading of the background literature?
e. Is submission of the thesis tracking to be on time?

Advisor Comments:

Advisor Signature:

Student Comments:

Student Signature:

Journal Club Guidelines

Attendance and participation in all relevant Department journal club sessions is expected of all students and is an essential component of the Honours course. The presentation provides the opportunity to communicate a scientific manuscript to an audience, to discuss the findings and conclusions of the article with the members of the audience, and to practice core scientific communication skills. Students are expected to participate in each session by reading the manuscript before each meeting and actively contribute to questions and discussions. A register of attendance will be kept with students expected to attend unless they have obtained an exemption from their Department Honours representative (e.g. due to illness). Note: Journal club marks may be reduced by up to 10% if it is deemed that students are not adequately participating in the journal club sessions.

The Process: Honours student presentations will be organised by each department's Journal Club Coordinator to occur within the first 6 months of the project year. A journal article will be assigned by the Honours committee Department representative 3 weeks ahead of the scheduled date of the presentation. To provide adequate opportunity for the audience to read the manuscript being discussed, presenters must send the Journal Club Coordinator the article one week prior to the presentation. Contact details for each Department Coordinator will be provided at the first Journal Club scheduled for the year.

Assessment: The Slides must be deposited as a PDF file online to Wattle, the Reading list must be submitted through online to Wattle via TurnItIn. Both of these files should also be emailed to the Journal Club Coordinator one day prior to the presentation. All assessments will be moderated by the Convenor and Committee before a final mark is awarded. It will constitute 15% of the Honours mark. The presentation mark will be based on points according to the following checklist and Journal Club Score Sheet below:

Oral Presentation Marking Criteria

1. Introduction & background material, Statement of aims of presentation
   - Does the introduction appropriately explain the broader background of the manuscript?
   - Why is the presented work of immediate relevance to the field?
   - Is sufficient background presented for the audience to understand the specific aims of the study?

2. Overview & Explanation of Methods and Results
   - Can you articulate the key methods and results of the study?
   - Is key data presented accurately?
   - Have you shown ability to critically assess the study design, experimental approach and statistical analysis?

3. Discussion and Interpretation of data
   - Do you accurately explain the strengths and weaknesses of the manuscript?
   - Is there an awareness of the quality and limitations of the data?
   - Do you articulate the authors' interpretation of the implications of the data?
   - Can you critically assess the conclusions and discussion of the manuscript in the context of the wider field?

4. Handling of questions and group interactions
   - Do you respond positively and answer questions accurately?

5. Overall Presentation Quality and Delivery
   - Quality of oral communication and use of presentation aids
   - Is your language engaging and appropriate for a scientific presentation to the Departmental audience?
   - Do the slides use appropriate examples of text materials, outlines, graphs, images?
   - Are slides legible, visible, interesting, and well organised?

6. Reading List - 5 primary research articles (no Reviews) most relevant to the manuscript, incl. short description of relevance.
   - Do you provide clear summary and evaluation of each of the references with an emphasis on how they relate to the presented paper and why they were chosen (250-word maximum for each paper)?
   - Are all references highly relevant to the topic and from credible, scholarly journals?
   - Is each reference properly and completely cited?

Journal Club Marking Sheet

Student Name: _____Examiner Name:_____Date:

General principles for evaluation

- Presentation of all **relevant** background.
- **Selective** presentation of key results.
- **Critical evaluation** of strength/weakness including appropriateness of methods
- Explanation of importance for wider field and possible impact.
- Clear and logical presentation (no marks for aesthetics).
- Complexity of paper and diversity of methods etc. should be taken into account when marking.
- Utilise the entire marking range in the categories specified below taking into account the expected percentage of students achieving these marks.

Expected percentage of students scoring within the specified marking range in a single category (Introduction, Methods, etc.)		
Exceptional	95-100%	Top 5% of students should achieve **this score** within a marking category
Outstanding	90-94%	Top 10% of students should achieve **this score or better** within a marking category
Excellent	85-89%	Top 30% of students should achieve **this score or better** within a marking category
Very Good	80-84%	Top 70% of students should achieve **this score or better** within a marking category
Good	75-79%	Bottom 30% of students should achieve **this score or lower** within a marking category
Satisfactory	70-74%	Bottom 10% of students should achieve **this score or lower** within a marking category
Weak	<70%	Fewer than 5% of students should achieve **this score** within a marking category

MARKING CATEGORIES / CRITERIA	**60-69**	**70-79**	**80-89**	**>90**
Introduction				
- Background information presented	Significant omissions/ irrelevance	Some omissions, some irrelevance	Minor omissions, no to minimal irrelevance	Complete, no irrelevance
- Description of importance to the field	Largely unclear		Clear description	Very clear description
Mark:	**Comments:**			
Methods and statistical approaches				
- Key experimental methods /design/ approaches	Not explained, contains mistakes	Explained however no critical evaluation	Explained with some critical evaluation	Explained and critically assessed.
- Discussion of Statistical approach	None	Some, however not always correct or missed incorrect use of tests	Good, however contained some minor inaccuracies or missed some questionable use of statistical tests	Good and correct discussion of statistical analysis
Mark:	**Comments**:			

MARKING CATEGORIES / CRITERIA	**60-69**	**70-79**	**80-89**	**>90**
Results				
- Explanation of results	Omission of key results	Results presented however without focus on key results	Key results presented, with some omissions or lack of selectivity	Clear and selective presentation of all key results
Mark:	**Comment:**			
Discussion and Interpretation of data				
- Assessment and Interpretation of the implications of the data	Directly based on text of paper	Some capacity to understand the authors interpretation	Capacity to understand the authors interpretation	Capacity to understand, critically assess the authors interpretation
- Awareness of quality and limitations of the data	No awareness	Some awareness	Awareness	Awareness
- Explanation of the overall strengths and weaknesses	Very limited capacity	Limited capacity	Limited capacity	Good capacity
- Critical assessment of the conclusions and discussion in the context of the wider field	No critical assessment	No critical assessment	Some assessment	Good assessment
Mark:	**Comment:**			
Ability to Answer Questions - Difficulty of questions and relatedness to paper should be taken into account				
- Answers questions directly related to paper	Responses incorrect or do not answer the question	Responses somewhat incorrectly or requires prompting from audience	Responses correct	Responses are accurate and logical
- Engagement	Not positive	Some positivity	Positive	Positive
- Explanation	Longwinded and/or does not answer the question	Longwinded and only partially answer the question	To the point and largely answer the question	Fully answers question. Draws on information from outside paper.
Mark:	**Comment:**			

MARKING CATEGORIES / CRITERIA	60-69	70-79	80-89	>90
Overall Presentation Quality and Delivery				
- Information Delivery	Presentation hard to follow	Communication largely clear with some jumps in logic, reasonable use of presentation aids	Good communication and good use of presentation aids	Clear communication and outstanding use of presentation aids
- Slide presentation	Overloaded	Slides mostly legible, sometimes unclear or overloaded.	Slides mostly legible, visible, interesting, well organized	Slides legible, visible, interesting, well organized
- Language and Vocabulary for Departmental audience	Inappropriate for a scientific presentation	Appropriate for a scientific presentation	Engaging and persuasive scientific presentation	Engaging and persuasive scientific presentation
- Visuals presented (Text, Outlines, Graphs, Images)	Confusing	Appropriate examples	Appropriate examples	Appropriate examples
Mark:	**Comment:**			
Written Reading List – 5 primary research articles relevant to the manuscript				
- Summary, evaluation and relevance of the reference	Poorly described papers, unclear relevance of chosen papers	Papers not clearly described, some papers of unclear relevance	Clear description with some critical evaluation, selection of relevant papers	Clear description and critical evaluation, selection of key papers with good description of relevance
Note: If fewer/more papers are listed, mark the presented papers but a 20% penalty for each missing/additional paper will be applied by the Convenor when calculating final marks.				
Mark:	**Comment:**			

Expected percentage of students scoring within the specified marking range in a single category (Introduction, Methods, etc.):

Exceptional	(95-100%)	- top 5 % of students should achieve this score within a marking category
Outstanding	(90-94%)	- top 10 % of students should achieve **this score or better** within a marking category
Excellent	(85-89%)	- top 30 % of students should achieve **this score or better** within a marking category
Very Good	(80-84%)	- top 70 % of students should achieve **this score or better** within a marking category
Good	(75-79%)	- bottom 30 % of students should achieve **this score or lower** within a marking category
Satisfactory	(70-74%)	- bottom 10% of students should achieve **this score or lower** within a marking category
Weak	(<70%)	- fewer than 5% of students within a marking category

Note: Please, use the full range for each individual category as the final average mark will converge to the mean ! (E.g. the percentage of students with a final mark of "Exceptional" or "Outstanding" will be significantly lower than 10%.)

Guide for examiners:

The descriptors in the right column should be used as a guide where suitable, but may not be applicable to all disciplines.

Points in blue can only be assessed after considering comments from supervisor.

Please keep in mind that the students have a word limit of 10,000 words (approx. 30 pages, including Introduction, Results and Discussion sections), therefore they need to be selective in what they include.

	Indicative percentage of the final thesis mark	Fail (<50%)	Weak (<70%)	Satisfactory (70-74%)	Good (75-79%)	Very Good (80-84%)	Excellent (85-89%)	Outstanding (90-94%)	Exceptional (95-100%)
Introduction	20								
- essential topics covered and appropriately referenced		Serious gaps Missing or not relevant references	Some gaps	Minor gaps	No gaps	Critical analysis Appropriately referenced, using predo		Progressive analysis minantly original research articles	
- existing literature is integrated with clear logic		Disconnected, confused				Cohesive and logical		Publishable review quality	
- text is well structured and supported with appropriate use of figures		Unstructured, difficult to read, no supporting figures				Well structured, appropriate use of figures		Excellent structure and writing style, use of self-made figures if appropriate	
- provides rationale for the research question		No clear connection to research question				Provides rationale for the research question		Rationale and broad significance of research question clear and persuasive	
- provides clear aims and/or hypothesis (including student's contribution in developing aims/hypothesis)		Uncomprehensive aims/hypothesis		Clear aims and/or hypothesis		Logical and innovative aims/hypothesis		Logical and innovative aims/hypothesis partially driven by the student	
Methods	10								
- all methods are covered with appropriate details		Little experimental detail provided		Some missing details		Sufficient experimental detail to understand how the results were obtained		Experiments could be reproduced by a person broadly familiar with the basic technique (need not be a protocol)	
- comprehensive list of reagents and equipment		Significant exclusions						All details present	
- student's contribution to experimental design and establishing protocols		None		Low		Some		High	

	Indicative percentage of the final thesis mark	Fail (<50%)	Weak (<70%)	Satisfactory (70-74%)	Good (75-79%)	Very Good (80-84%)	Excellent (85-89%)	Outstanding (90-94%)	Exceptional (95-100%)
Data and Analysis	20								
- clear explanation of study design, replicates, exclusions, data processing (information could be also in Methods section)		Does not address key experimental design considerations				Shows awareness of study design considerations		Study design is clearly discussed and justified	
- overall quality and quantity of data (appropriate to the project and discipline)		Experiments lack key controls, poor data quality		Controls appropriate, but data only of moderate quality		Data of good-excellent quality and sufficient to support the conclusions		Outstanding/exceptional data quality allowing strong conclusions to be drawn	
- appropriate data analysis (statistical tests, normalization, replicates when appropriate)		Little or no attempt at statistical analysis		Statistics performed, but may not always be appropriate		Appropriate use of basic statistical techniques		Complex statistical analysis that accounts for random as well as experimental factors and multiple comparisons	
- student's work ethic, technical skills and independence		Significant issues with work ethic, and or efficiency		Strong work ethic, efficient and careful		Ability to work independently of supervisor's immediate direction		Put forward own ideas and implemented them	
Results	20								
- logic, structure and narrative, links results to research aim		A rudimentary list of findings		Results presented and adequately described		Clear, logical and concise presentation of results		Coherent and complete narrative of the results	
- strength of conclusions		Data is insufficient to support conclusions				Conclusions are well supported by the presented data		Strong conclusions drawn from definitive/multiple experimental approaches	
- presentation of the data, figures, tables, legends		incomplete data and/or poor figure legends		Presentation of data and legends satisfactory but some data missing		Data and legends clearly presented and complete		Figures and legends outstanding-exceptional quality	
- style and formatting		Many errors, poor grammar		Writing sometimes unclear, may be typographic errors		Writing clear, good use of connecting sentences, few typos		Outstanding-exceptional quality of writing throughout	
Discussion	30								
- summary of key results		Lacks summary of key findings		Unclear or incomplete summary of findings		Clear summary but may not distinguish most important findings		Clear summary that highlights most important findings;	
- testing original hypothesis and/or developing a model		Not discussed original hypothesis or no suggested model				Places findings in context of original hypothesis		Develops original, testable model (if appropriate)	
- integrating results/model in the existing literature		Data not placed in the context of previous findings				Placed in the context of previous findings and differences identified		Integrate and reconcile discrepancies	
- explains broader significance		Fails to note wider significance		Limited explanation of significance		Explains broader significance		Clearly articulates significance of findings to the broader field	
- discusses limitations of study		No discussion		Partially identifies limitations		Highlights most major limitations		Highlights limitations and suggests meaningful approaches to mitigate	
- future directions		Limited ideas for future studies				Proposes feasible future directions		Proposes feasible and innovative future directions	

Comments about Introduction:
Comments about Methods:
Comments about Data and Analysis:
Comments about Results:
Comments about Discussion:

FINAL RESEARCH SEMINAR - 10% of the final mark

Students will present the outcomes of their project in their Final Research Seminar (12 min talk, 3 min discussion). On the day of your seminar, students are required to have their presentation ready on a USB drive for loading onto the supplied laptop prior to the start of the first seminar on their allocated day.

Grades will be based on presentation skills, including discussion of the research background, critical analysis and presentation of the data, understanding of the research in the context of the field and ability to answer questions. The student should be able to:

1. Demonstrate understanding of methodology used and any limitations of that methodology
2. Demonstrate ability to summarise, analyse and describe your own results [this is of paramount importance]
3. Demonstrate awareness of the limitations of their experiments and factors which might have influenced the results
4. Demonstrate ability to critically discuss the significance of your results and outline logical future directions
5. Handle discussion and questions from the audience

Final Seminar Score Sheet		
Student Name:	Examiner Name:	Date:

Category	Total	Comment
1. Introduction & background to the project - Clearly describe research immediately relevant to the project - Presents sufficient background for the audience to understand the specific aims of the study	/10	
2. Explanation of Methods and Results - Able to critically assess the project design and experimental approach, including statistical analysis	/10	
3. Discussion and Interpretation of data - Capacity to understand and interpret data - Awareness of both implications and limitations of the data - Ability to critically assess relevance/importance of the findings to the wider field - Coherently outline future directions	/10	
4. Ability to Answer Questions - Answers questions logically and accurately - Respond positively to answer questions accurately - Responses are to the point and fully answer the question	/10	
5. Overall Presentation Quality and Delivery - Quality of oral communication and use of presentation aids - Clear and logical presentation and ability to engage the audience - Use of appropriate language and vocabulary for an engaging and persuasive scientific presentation pitched to the audience - Effective use of slides, which are legible, visible and interesting	/10	