

Session 2019-20

# Research Skills Handbook

*BVSc, Year 2 and Year 3  
Institute of Veterinary Science*

---

**Convener VSCI200**

Literature Review

*Dr Zeeshan Durrani*

Email: [z.durrani@liv.ac.uk](mailto:z.durrani@liv.ac.uk)

**Convener VSCI300**

Research Project

*Professor Nicola J Williams*

Email: [njwillms@liv.ac.uk](mailto:njwillms@liv.ac.uk)

## An Overview of the Research Skills

As part of your BVSc you will undertake a research project in your third year, however you will also undertake a literature review in the second semester of your second year. The literature review ideally should be in a related area to your third-year project, as the aim of this review is to give you an insight into a subject area, preparing you for your project in third year. The review should also enable you to acquire skills for critically reviewing and assimilating research undertaken by others, which is an important skill for life-long learning. For the literature review, students should reasonably expect to drive the topic to be reviewed, providing the supervisor feels it is within their area of expertise and that there is sufficient peer-reviewed literature available for review. You may discuss the topic for your second-year review in light of ideas for your third-year project; however, the third-year project topic does not have to follow that of the second-year literature review, as in undertaking the review you may find a different avenue that may be more fruitful for study. Similarly, you may develop a different preference for the type of project you would like to do, and wish to do a wet or dry project, or equally decide you prefer not to do this type of project and prefer a mini-review. For research projects, these should represent a collaboration between student and supervisor(s). Therefore, we would encourage students to suggest or contribute to ideas for projects; however, the supervisor will have a greater role here, as they will have a better understanding of the feasibility of a project and for example, whether it is too ambitious for the time available, or if there are insufficient published studies to address a specific research question. Therefore, the supervisor will have the final decision on the type of research project (mini-review, dry or wet project) and the topic to be studied.

For third year research projects, students will have the same supervisor/supervisory panel that they had for their literature review in second year. Students will not be allowed to change supervisors unless there is a very strong case for this, or if their supervisor has left the university, or is on long-term leave. In most cases where the supervisor has left, a replacement supervisor will be assigned within the same area/department.

Leading up to your second-year literature review, you will be provided with dedicated sessions aimed at developing your research skills. However, throughout your course you are also provided with other teaching sessions to help you develop skills, which may be useful to your research projects. There are also resources available through library and KnowHow, to assist you in finding a range of quality information and access to software and databases, which will assist you in undertaking both your literature review and your research project.

## An overview of semester 1

In second year (VSCI200), you will receive a series of useful workshops in first semester, which include:

- i. Effective literature searching (how to use search databases)
- ii. Managing references and avoiding plagiarism
- iii. Scientific writing and constructing academic arguments
- iv. Intercalation and summer studentship opportunities
- v. Research methods
- vi. Introduction to Literature Review
- vii. Reviewing the research papers (Journal club session)
- viii. Online resources/ discussing examples of LR/ PeerMark exercise etc.

### *Identification of research topic and matching of supervisors*

As discussed in the introductory lecture, you are advised to visit and review the UoL's faculty of health sciences websites to find out main research themes within the institutes i.e Institute of Veterinary Science (IVS), Infection and Global Health (IGH), Integrative Biology (IB), Ageing and Chronic Disease (IACD). This task will allow you to appreciate the ongoing research at the UoL and help you in selecting few areas that may be of interest to you.

The matching of supervisor and allocation of research topic is performed by utilising an electronic proforma system where students provide their area of interest. The staff allocation process is usually finalised around Christmas time and all staff members as well as students are informed via email as soon as the formative examinations are over.

## An Overview of Semester 2

### *Contacting and meeting with allocated supervisor (23<sup>rd</sup> - 31<sup>st</sup> January, 2020)*

Once you receive an email confirming your supervisor allocation, it is your responsibility to contact your supervisor in order to arrange a meeting and discuss a suitable topic for your literature review (LR). This meeting needs to take place as soon as possible so that you can spend the most of the time available for performing their literature review. Supervisors are expected to respond to your meeting request within 3-5 working days. Meetings can be face-to-face, or via telephone or internet video call; whichever is most appropriate for supervisors.

*Important note: Supervisors will have specific ongoing research interests and resources, which will dictate the nature and extent of the research project. You should therefore be willing to accept the recommendations made by the supervisor when finalising the topic.*

### *Writing a Literature Review (LR)*

Based on the topic provided by the supervisor, you are required to write a Literature Review in semester 02. There is a 2hr allocated slot per week in teaching term (09 weeks in total) to complete this task and 03 weeks of Easter break until the submission date. During the literature search and writing phase, there should not be a requirement for significant input from the supervisor however; your supervisor is expected to provide you a written or verbal feedback on the literature review on one occasion before final submission.

**Please note the following:**

The maximum word limit for writing the Literature review is 2500 words (+/- 10%) which excludes reference list, abstract and appendices. Citations within the text e.g. (Austin et al., 2005), title, associated headings, tables and figures are all included in the word count.

If you are struggling with the word count, you can include tables and figures in appendices, which will not be counted towards the word count!

You are required to review journal articles between 10 and 15 on your topic and write a literature review and you must follow the Harvard referencing style. You are encouraged to use Endnote/Mendeley software, which is available through the university.

**Rules for providing feedback on LR**

Between week 7-9 of semester two (before Easter break, deadline is Friday 27<sup>th</sup> March, 2020), you are advised to submit your first draft to your supervisor for feedback via Turnitin. In order to avoid variation in the amount of feedback all staff members will only provide feedback ON THE FIRST DRAFT and this should include generic feedback related to the knowledge and understanding of the research topic, inclusion or exclusion of the themes, writing format and presentation, relevance of published studies and referencing style etc. The feedback must not amount to editing exceeding 10% of the submitted draft, as this is a learning process and you are expected to put effort in producing an acceptable review.

It is advisable to arrange a draft submission date between you and supervisor that suits both parties, as feedback must be received in a timely fashion – ideally within 5 working days of draft submission (proposed deadline for supervisor is Tuesday 21<sup>st</sup> April) There must be sufficient time between receiving feedback and the final submission deadline to enable you to make suggested changes and complete the literature review.

**Deadline for submission of the LR (27<sup>th</sup> April, 2020)**

The deadline for submission of the LR is Monday 27<sup>th</sup> April, 2020 (4.00pm). We recommend that submission should not be left until the last minute, in case of technical difficulties during submission.

**Submission and marking of LR****Note for students:**

Submission of LR is via the Turnitin assignment tool. A marking rubric is designed to assess the literature review for final assessment and are marked by your own supervisor. Please see VITAL folder to view the pdf version of the marking rubric and exemplars.

We check all submissions for similarity via Turnitin and it is important that a standard word format (.doc or .docx) is submitted on VITAL.

**Note for supervisors:**

All supervisors are granted access to VSCI200, which will allow them to access all information (Res skills folder) available to students and subsequently grade the final LR via Turnitin tool. Supervisors will receive a reminder email in due course (**after 27<sup>th</sup> April 2020**) once the LRs are available for marking.

The deadline for marking the Y2, literature Reviews is 25<sup>th</sup> **June 2020**. This will allow you approximately 3-4 weeks to mark the LRs as well as providing feedback via Turnitin.

Following completion of the marking process together with nominated staff member within the Vet School, the convener (ZD) will moderate the results according to the University's Assessment Policy i.e at least 15% of all assessment items should normally be examined by the moderator, where the number of students undertaking an assessment task was 150-299).

## *Expectations from Supervisor*

The expectations from supervisor towards completion of LR in Y2 in minimal and it is anticipated that the entire contact time with the second years students in between 3-5 hours (i.e. initial meeting with student, providing guidance on topic, feedback on first draft only, final marking & feedback).

## *Supervisor conflicts, other issues or advice*

Please contact Zeeshan Durrani ([z.durrani@liv.ac.uk](mailto:z.durrani@liv.ac.uk)) if you have any issues you need to discuss.

## **IMPORTANT**

### *Plagiarism*

In accordance with university policy all submissions will be assessed for plagiarism using the anti-plagiarism software 'Turnitin'. Please ensure, therefore, that submitted work is your own, and in line with good scientific practice has been reviewed, reworded and referenced in the required Harvard format.

### *Late Work*

- Work submitted after the original submission date/time or after the extended submission date will be recorded as LATE.
- LATE assessed work will be penalised and the penalty incurred will be **5 marks for anything up to 24 hours after a deadline and 5 marks per day after this, including weekends**.
- Non-submission of assessed work will result in zero (0%) being awarded for that element of assessed work.
- If you need to request an extension you should complete relevant before the deadline (Request for Extension to the Submission Date for Assessed Work). Forms are available from form from school office, in TY building.
- Requests for an extension are considered by the convenor (ZD) and assessment office within the school, who will only grant an extension if there are any extenuating circumstances (EC). Claims should be accompanied by a valid evidence (e.g. medical certificate or other valid certified evidence). Acceptable and unacceptable reasons for granting an extension are listed under extenuating circumstances. You must obtain the signature of the Head of Subject who will make a decision based on the written evidence.
- If an extension is approved, school office will write to you to confirm the new submission date.

This section provides  
information related Y3  
research projects

# Research Skills Handbook

VSCI300

Professor Nicola Williams

---

For third year projects, the actual research project will always start in the first semester and students will have one whole day allocated per week for a period up to 11 weeks for projects. Whilst students may want to determine the subject area and details of the project before the start of term or do some reading around the topic, actual project work should not start till the first semester. Therefore, supervisors may be contacted over the summer break for the above purpose, or to discuss planning should ethical approval be required for a project.

## *Important dates*

For 2019/20, Tuesdays are assigned for projects, starting on the 1st October and these will run for 11 weeks till 10<sup>th</sup> December.

Date	Task
1st October 2019	Research projects start.
Around the week of 18 <sup>th</sup> November 2019	Meeting (face to face or online) with supervisor to discuss project progress, results and report writing.
4pm 2nd December 2019	Submission of full project report draft to your supervisor by email.
16 <sup>th</sup> December 2019	Feedback on your report from your supervisor will be available on Turnitin.
4pm 8 <sup>th</sup> January 2020	Final submission of your report through Turnitin.

## *Submission of project reports:*

The final submission date is the **8<sup>th</sup> January at 4pm** and the final draft for marking should be submitted through turnitin, within the submission folder there are two turnitin submission links, one marked 'supervisor' and one marked 'second marker'. Students should submit project reports through **both** of these links. This will allow the supervisor and second marker to mark your projects on-line using two different marking rubrics, and will allow you to view the report and receive further feedback from your markers regarding your final report.

## *Aims and learning outcomes*

There are essentially three different types of projects which you can undertake, a mini-review, dry or wet project and projects are usually allied to the areas of expertise of the supervisor. However, all projects have the same aims and learning outcomes:

1. To provide an appreciation of the role and challenges of research in veterinary medicine and in the allied sciences.
2. To plan and execute a piece of original scientific research.
3. To analyse and critically evaluate data (published or original), information, literature and observations, and draw valid conclusions.
4. To develop skills in scientific writing and the ability to communicate the methods and main findings in a scientific report, and to put these into context.

## *Projects will involve the following assessed components;*

Project report - 80% (comprising 40% of the mark from the first marker (supervisor) and 40% from the second marker, which both assess different aspects of the report).

Student application – 20%

## *Types of research project*

The following are examples of projects, which are illustrative and not prescriptive:

Laboratory wet projects involve investigating a hypothesis employing laboratory techniques such as microbiology, histology, physiology, molecular biology, etc. These projects may also involve database work alongside that of the work in the lab.

Other wet projects similarly involve investigating a hypothesis in the field, which may involve observation/behavioural studies, measurements and the collection of data out in the field, clinic, or other environment.

Pedagogical projects may involve the testing of a teaching related question by evaluation or questionnaire.

Dry or data analysis projects may involve analysing data related to a hypothesis or research question, for example to look at risk factors for a disease, or analysis of a clinical case series to compare outcomes of different treatments. These may also involve questionnaire surveys to collect the data for analysis to address a specific research question. Projects may also include undertaking clinical audits.

Mini-reviews where possible should involve comparative analysis of published data, with hypothesis-driven evaluation and synthesis of data and evidence-based analysis involving the process of systematically reviewing and critically appraising published research findings. As stated above, these should be focused around a hypothesis or specific research question and



should **NOT** consist of an extended literature review or critically appraised topic (CAT) type analysis.

## *Research Ethics Approval*

Any research involving the recruitment of people and/or animals, or their samples will require ethical approval in accordance with the University of Liverpool requirements for research governance and good research practice. Clinical audits, anonymised data or samples related to animals who have been patients in the PLEH or SATH are covered by generic ethical approval, however if additional data is required, or additional samples collected from animals then ethical approval may be required. Prior approval always has to be granted before such work can commence.

Please discuss with your supervisor if your project should require ethical approval, and such applications must be led by the supervisor. Further information on ethics can be obtained from [vetseth@liv.ac.uk](mailto:vetseth@liv.ac.uk), or by contacting David Killick ([drk@liv.ac.uk](mailto:drk@liv.ac.uk)) with any queries.

## *Funding for research work*

There is funding available up to £300 per project for both dry and wet projects. These should be used to pay for laboratory consumables, questionnaire printing and posting, and any off-site travel to collect samples or data. These funds will not be used to cover student travel to Leahurst Campus (see funding for student travel to Leahurst below), furthermore these funds cannot be used outside the assessment period to fund work relating to the project. If a piece of equipment needs to be purchased specifically for a project, then a case justifying this needs to be provided by the supervisor to the project convenor ([njwillms@liv.ac.uk](mailto:njwillms@liv.ac.uk)), prior to it being purchased.

For staff hosting students, all items required for projects should be ordered through the IVS finance team ([vetsfin@liv.ac.uk](mailto:vetsfin@liv.ac.uk)) using a requisition form, no funds will be transferred to institutes or recharged except under circumstances where project funds are co-supporting activities related to the student project. Orders for research projects will only be accepted by vet finance January through to April.

## *Reimbursement of student travel costs to the Leahurst Campus*

Students travelling to Leahurst will also be able to claim up to £50 in total to cover their travel expenses. We would strongly recommend students car sharing as much as possible to also assist with covering travel costs.

Forms for claiming are available on Vital in the 'Travel claims folder'. Students need to keep a **travel log form** and this needs to be signed off after each visit by their supervisor and then a **payment request form** filled in, along with the **form detailing the student bank account** details. Please note that all travel claims need to be submitted before the end of January.

## IMPORTANT

### *Plagiarism*

In accordance with university policy all submissions will be assessed for plagiarism using the anti-plagiarism software 'Turnitin'. Please ensure, therefore, that submitted work is your own, and in line with good scientific practice has been reviewed, reworded and referenced in the required Harvard format. Final reports with >25% similarity will be assessed for plagiarism and where this is evident, penalties will be applied according to the criteria set out in the Academic Integrity Policy and the Code of Practice on Assessment Appendix L – Academic Integrity Policy.

### *Late Work*

- Work submitted after the original submission date/time or after the extended submission date will be recorded as LATE.
- Only students with a confirmed Disability Support Plan will be allowed to be granted an extension to a deadline date.
- LATE assessed work will be penalised and the penalty incurred will be **5 marks for anything up to 24 hours after a deadline and 5 marks per day after the submission date, up to a maximum of five working days. After 5 days your mark will be reduced to zero.**
- If you are unable to submit your report by the deadline due to illness or other unforeseen circumstances then you are entitled to request exemption from late penalties. A Application for Exemption from Late Submission Penalties form will be available in the School Office. Further guidance on this is available in the research project folder for staff and students in the information sheet.

## *Responsibilities and expectations*

### Students

1. It is the students' responsibility to contact their supervisor(s) and initiate project updates, and to arrange meetings.
2. If undertaking a laboratory project, please discuss preparing a risk assessment with your supervisor, which should be signed off by them and prepared ahead of any health and safety induction. For those undertaking fieldwork, ensure that you have prepared a fieldwork risk assessment and that this is signed off by your supervisor prior to you undertaking the work. For this you should also discuss any health and safety issues regarding visiting field sites and requirements for lone working. Information about health and safety can be found on Vital in the research project folder.
3. Students should check their **university email address** and respond to supervisor enquiries.
4. Students should also keep records of their project work for discussion with their supervisor.
5. Students should submit the draft of their report on the date specified above; please note that late submission to staff may result in staff not having sufficient time to provide thorough feedback on your report.
6. To get the most effective feedback on the full draft, you should submit to your supervisor as complete a draft as possible and include all sections, figures and legends. It is not the role of the supervisor to re-write your report, or to identify every specific issue, they should identify (usually by example) particular issues and areas for improvement and examples on how and where to improve your scientific writing. The feedback provided is advisory, ultimately, the quality of your final report is entirely your responsibility.
7. In addition to reading and commenting on the full draft, supervisors should answer specific questions relating to the content and layout.
8. Be professional in your dealings with your supervisor, and other research staff you encounter. In particular, agree times for meetings, be punctual, and bring the appropriate materials with you.
9. Some staff are on clinics, so be reasonable in your expectations on how quickly they can respond to emails and when they are able to meet. Polite follow up emails may be necessary to prompt a reply for staff who are away, or busy with teaching and clinics.
10. If you have any serious concerns or issues relating to your project, you should urgently contact Nicola Williams ([njwillms@liv.ac.uk](mailto:njwillms@liv.ac.uk)), please do not wait till later in the semester when it may be more difficult to resolve any problems.

## Staff

1. Staff should respond to student enquiries within 3 working days, or send a holding email detailing when they are able to respond, if they are on clinics, or away/on leave, or have an out of office reply on, stating when they are available.
2. For availability, the supervisor or supervisory team should make themselves available for an initial meeting at the start of the project, or shortly after commencement to discuss the focus of the project, and arrange meetings as required during the project to ensure adequate supervision of students. Where staff cannot make an early meeting, you should advise on reading or some actions for students to commence their projects.
3. Contact time for mini-reviews should be no more than 10 hours and up to 20 hours for wet and dry projects, however some of that contact time may be with others within a supervisory team, or a research group.
4. For students undertaking wet projects and requiring access to labs, it is your responsibility to ensure that your students have an appropriate health and safety session arranged, and introduction to the laboratory. In addition, you must ensure that students have a suitable risk assessment, which you must sign off. In addition, students undertaking fieldwork should also have a fieldwork risk assessment prepared and consideration should be given to lone working of students at field sites and all reasonable considerations to ensure their safety.
5. For students undertaking dry projects involving data extraction, they need to be on site for access to hospital databases (no remote access is allowed for data security purposes) and that, if you are not available to show them how to extract data that someone else is available to do this. Computers should be used in the main building of Leahurst, not in hospitals to ensure there are sufficient computers in the hospital areas for rotation students and staff to access.
6. For any projects which require ethical approval, is it your responsibility to lead this and submit the ethics application, you must ensure that this is submitted and approved prior to projects starting.
7. No actual project work should be supervised till the start of the first semester. Or if following on from a summer project, data in the project report should be new or represent new analysis that has taken place during the first semester.
8. Part of the learning experience from projects is for the students to benefit from your advice and feedback on scientific writing. You are not expected to re-write project reports, but should give constructive and clear feedback and advice, where possible giving examples on how they can be approved. Please only give feedback on the one draft. You can of course provide guidance on figures and tables and have discussions around how data should be presented and incorporated into the report.
9. As a supervisor you may not grant extensions to deadlines. You may arrange with students a later date for submission of the draft of their report, but must provide

feedback on this by the above date and it must be uploaded onto Vital and not emailed to the student.

- Please ensure any data required for analysis as part of the project is available at the start of the project and all ethical approvals are in place so the work can start straightaway. Please note that extensions will not be granted for projects due to supervisors not having data ready or ethical approval in place when projects commence.

## **Final project report**

All project reports should adhere to the following requirements and word counts, failure to do so may result in a deduction in marks.

## **Overview of specification**

<b>Wet/dry or similar projects</b>	<b>Mini-review type projects</b>
Word count excluding abstract, figures, tables reference list and appendices	
<b>3000 (+10%)</b>	<b>5000 (+10%)</b>
<b>General specifications</b>	
Title page	
Abstract	
Introduction	
Methods	
Results and discussion	Or, results and discussion combined as a single section
Conclusions	
Acknowledgements	
Reference list	
Appendices	

## **Report components**

The following provides more detail on the requirements and advice for writing the report. When writing the report, the past tense should be used for the work performed, however use of I/we in the text, as opposed to using a strictly passive form should be discussed with your supervisor(s). Please refer to examples on Vital for guidance on this and scientific writing styles.

### **Title:**

- Choose a title that is concise, but informative.
- It should describe the work performed and findings.

### **Abstract**

- Maximum of 250 words
- Should not include references
- Should introduce the topic, or motivation for the study: a problem statement or aims: approach or methods: findings and main conclusions.

It should be written in lay e.g. for a non-specialist audience and without the use of jargon, including abbreviations/acronyms which are not spelt out. You should describe the objectives of your work, the reasons why they are interesting or important and how the project contributes to knowledge or practice, or highlights deficiencies in the data/studies.

## **Introduction**

- This should provide background to the field of study
- State the purpose of the work e.g. the scientific hypothesis or question
- Provide the rationale for the approach taken

This section of the report may contain material from your second-year literature review if appropriate.

## **Materials and methods**

- Should be sufficiently detailed for the work, or review to be repeated.
- Should be written in a format appropriate for publication in a journal relevant to the type of work (see examples on Vital).

## **Results**

- Present data and analyses, and raw data should be presented in an appropriate form, e.g. not a very long table detailing every result.
- Each result should be accompanied by text explaining the rationale for the experiment/observation; a succinct description of the method used to obtain the data; the methods used to analyse/interpret the data and sufficient comments and discussion to link the results in a coherent narrative.
- Sub-headings may be appropriate and also helpful to the reader.

## **Tables must:**

- Be numbered consecutively and according to their appearance in the text (results or other sections) e.g. Table 1.
- Have informative and appropriate titles.
- Must be referred to in the text.
- Explanatory material may be included as footnotes below the table e.g. definitions of acronyms and/or abbreviations.

## **Figures must:**

Be numbered consecutively according to their appearance in the text.

Have an appropriate and self-explanatory title.

Legends must be intelligible to the reader without reference to the text.

Define all abbreviations, acronyms and symbols.

## **Discussion (it may be appropriate to combine this with the results for mini-reviews)**

- Should critically review the findings, how these may relate to the work of others.
- Indicate whether the findings support any hypothesis being tested.

- Discuss limitations of the work.
- Discuss possible future work.

## Conclusions

- State fully the main conclusions and their implications.

## Acknowledgements

- Should acknowledge contributions from others who have aided the project, including those who may have provided data for example.

## References

These should be Harvard style and you are encouraged to use Endnote software, which is available through the university.

- Show the names of all authors when there is one or two for in-text citations, or for two or more authors, state the first author and 'et al' and the year.
- Ideally, refer to primary papers and not review articles.

## Examples:

- **In-text citations** "*Multidrug resistant bacteria, for example Escherichia coli, are commonly reported in dogs and other companion animals (Shaheen et al., 2010).*"
- **Journal articles**
- Shaheen BW, Boothe DM, Oyarzabal OA, Smaha T (2010). Antimicrobial resistance profiles and clonal relatedness of canine and feline *Escherichia coli* pathogens expressing multidrug resistance in the United States. *J Vet Intern Med* 24, 323-330.
- **Books**
- Daniels, K., Patterson, G. and Dunston, Y. (2014). *The ultimate student teaching guide*. 2nd ed. Los Angeles: SAGE Publications, pp.145-151.
- **Websites**
- Mms.com, (2015). *M&M'S Official Website*. [online] Available at: <http://www.mms.com/> [Accessed 20 Apr. 2015].

## ***Supervisor conflicts, other issues or advice***

Please contact Nicola Williams ([njwillms@liv.ac.uk](mailto:njwillms@liv.ac.uk)) if you have any issues you need to discuss and you will also be informed of times when she will hold drop in shops in Liverpool, and for which you can book a slot or turn up on the day. These sessions are aimed at providing support to students or resolving any project issues.