

**University of Karbala**  
**College of Pharmacy**



# **Graduation Research Project Guideline**

*Prepared by*

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## **The Aim**

The aim of this module is to give students the opportunity to carry out and report a sound empirical investigation of a research topic of personal interest to the student in pharmaceutical science, also it is an overall strategy for turning a set of results into a paper for publication as an attempt to encourage students to publish their research.

## **Section one**

# **Organizational Timing of Graduation Research Project**

## **2-1 Intended Learning Outcomes (ILOs):**

### **ILO: Group skills**

On successfully completing the practical research course you will be able to:

- 1- Identify a research problem in a specific field(s) of pharmaceutical science. [Assessment 1,2,3,4 ,5]
- 2- Search the available sources to gather information and review the literature in a specific field(s). [Assessment 1,2 ,3,5]
- 3- Plan, design and execute the research project complying with the pharmaceutical ethical requirements. [Assessment 1,2,3]
- 4- Write up their research project thesis following APA report writing conventions. [Assessment 3,5]

### **ILO: Personal skills**

On successfully completing the practical research course you will be able to...

- Communicate effectively arguments, evidence and conclusions using written and oral means in a manner appropriate to the intended audience. [Assessment 3,4]
- Analyze and evaluate appropriate data and complete a range of research-like tasks with limited guidance. [Assessment 1,3,5]
- Interact with a research team and deal proficiently with the issues that teamwork requires (i.e. communication, motivation, decision-making, awareness, responsibility, and management skills, including setting and working to deadlines). [Assessment 1,2]
- Demonstrate understanding of the professional (graduate-level) and ethical responsibilities, and commitment to them. [Assessment 1,2]

**Table (1): Assessment**

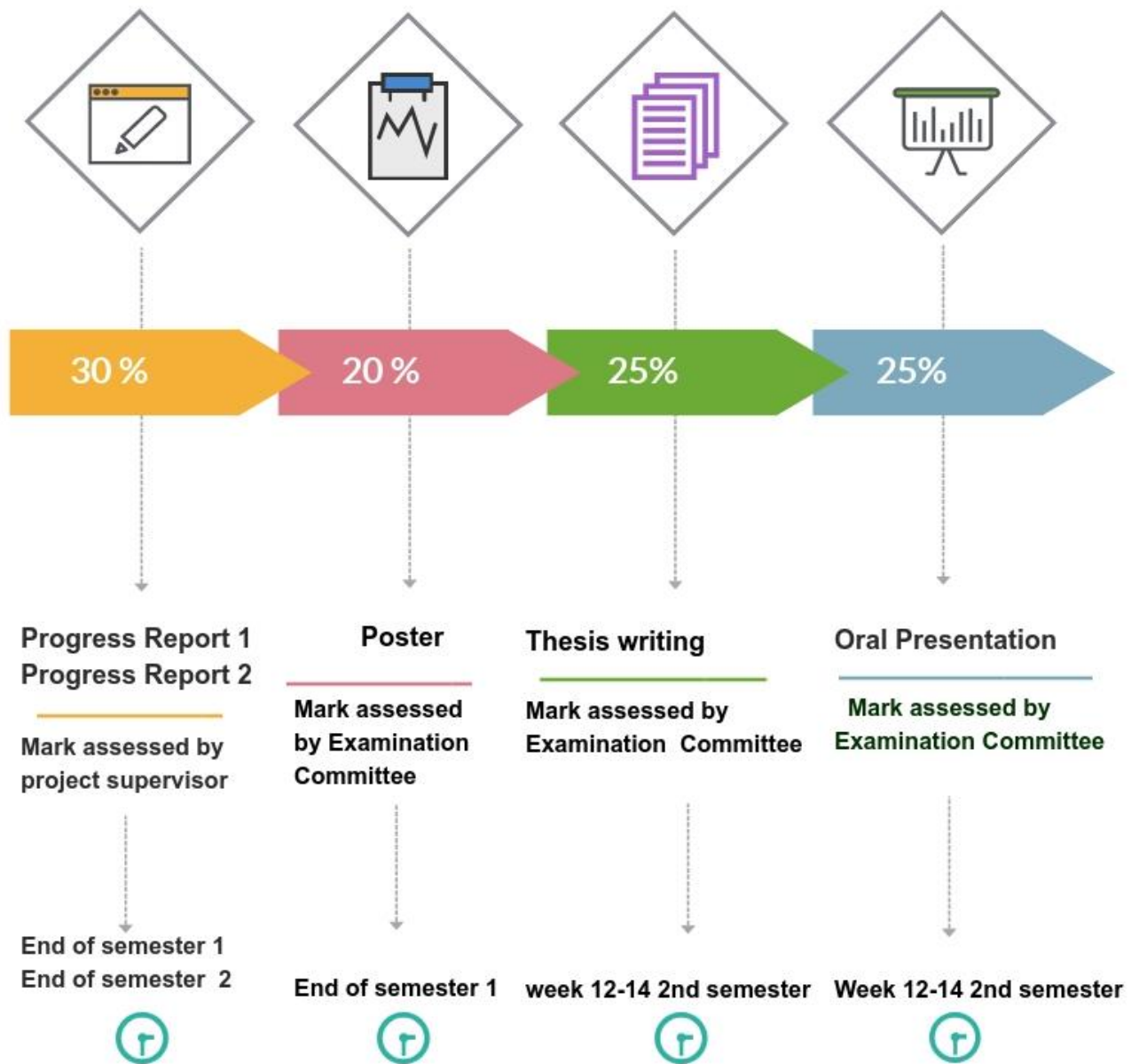
<b>Assessment</b>	<b>Weight (%)</b>	<b>PIC</b>	<b>Due date</b>
1. Progress report 1 2. Progress report 2	15 15	Supervisor Supervisor	End of 1 <sup>st</sup> semester End of 2 <sup>nd</sup> semester
3. Poster	20	Poster evaluation committee	End of 1 <sup>st</sup> semester
4. Oral examination 5. Thesis evaluation report	25 25	Examination committee Examination committee	Week 12-14 of 2 <sup>nd</sup> semester Week 12-14 of 2 <sup>nd</sup> semester
Total	100		

PIC : Pharmacist in Charge

- progress report: a detailed report about the participation of student individually in practical and research work
- Poster: 100X100cm paper poster (the template including the basic parts will be provided)
- Oral examination: directed to evaluate the communication presentation skills and the perception of the research problem, design, methodology and results.
- Thesis evaluation report: revise the thesis according to the regulation and rules and APA style (a template will be provided)
- Poster evaluation committee: a committee of 2 members representing the five departments
- examination committee: a committee of 3 members representing the five departments

(<http://www.shanghairanking.com/ARWU2017.html> University of Exeter (151) )

# Pharmacy Student Research Project



**Table (2): Graduation Research Lectures, semester 1**

Week	Day	Date	Time	Topic	Speaker/ Moderator
Week 1	Sunday	1/10/2019	0-0	Overview & Course description	Dr.-----
				Introduction to Research Types	Dr.-----
Week 2	Sunday	7/10/2019		How to search database	Dr.
				How to write your background literature review and rational?	Dr.
Week 3	Sunday	0/0/2019		Group discussion: Present your literature review & background section	All supervisors s (according to the Supervisors of each group)
				Research Ethics	Dr.
Week 4	Sunday	00/0/2019		How to present your poster  (Elements of Poster based on UQU pharmacy criteria)	Dr.

## **2-2 Regulations and rules for writing the thesis:**

Before the oral discussion students must submit two draft copies (in plastic cover) of their thesis to the coordinators of the research project unit

**The thesis must consist of not less than 25 pages including all the following parts:**

1. Title page (includes title, names of the student, ID, supervisor name, faculty, department,
2. The title page must include the following statement “A Thesis Submitted to the B. Pharm. Program for the Course of Research Project in the College of Pharmacy”



3. English abstract 250 words (one page only)
4. Arabic abstract 250 words (one page only)
5. Introduction
6. Aim of the study
7. Materials and methods
8. Results and discussion
9. Conclusion and recommendations
10. References (APA style) see table (2)
11. Arabic abstract (not more than 250 words)

**The thesis must be written in**

1. Microsoft office word,
2. Paper size A4,
3. Line space 1.5,
4. Margins 2.5 cm in all directions
5. Pages must be numbered (1,2 ....., centered, at the bottom of the pages)
6. Font for Arabic part: traditional Arabic (font size 16)
7. Font for English part: times New Roman (font size 14)

**Note:**

- Students must apply all the rules of scientific research and scientific writing particularly the assignment on the scientific literature (references)
- literal transfer of information from the source is not allowed.
- Students must make a summary of sources and display their overview. We want also to inform you that submitted thesis will subjected to **plagiarism test** using the software available in Umm Al-Qura University.

## **2-3 After the discussion (oral examination)**

- Students must complete the required changes, modifications and corrections.
- The final form of the thesis must get approval from the examination committee.
- After getting the approval, students must submit three copies of their thesis in hard-cover
- The students must submit a soft copy of the following items on CD:
  1. The complete thesis as word file (single file, not less than 25 pages including the Arabic + English summary)
  2. Title page: (include the title, names of the students, faculty, in a separate word file)

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## **Referances**

- 1- <https://www.keele.ac.uk/modcat/2017-8/psy-30061.htm>
- 2- <http://www.shanghairanking.com/ARWU2017.html>University of Exeter  
(151)

*(The University of Exeter is a public research university in Exeter, Devon, South West England)*

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## **Section two**

# **How to write a graduation research project**

### **3- 1 Title**

The title you finally select for your manuscript forms an important part of your communication with your readers, both with the editor and referees who will evaluate the paper, and with the members of your discipline community whom you want to read the paper after its publication. Good titles clearly identify the field of the research, indicate the “story” the results tell, and raise questions about the research in the mind of the reader.

#### **Strategy 1: Provide as much relevant information as possible, but be concise**

The purpose of a title is to attract busy readers in your particular target audience, so that they will want to access and read the whole document. The more revealing your title is, the more easily your potential readers can judge how relevant your paper is to their interests.

#### **Strategy 2: Use keywords prominently**

It is important to decide which words (keywords) will capture the attention of readers likely to be interested in your paper and to place them near the front of your title. This practice also helps ensure that your title is picked up efficiently by the literature-scanning services, which use a keywords system to identify papers of interest to particular audiences. Wherever possible it is a good idea to place the most important word(s) in your title in the position of power: the beginning. For example:

- ☒ Effects of added calcium on salinity tolerance of tomato
- ✓ Calcium addition improves salinity tolerance of tomato

One effective way to ensure your keyword(s) are at the front of your title is to use a colon (:) or a dash (–) to separate the first, keyword-containing part of the title from a second, explanatory section. Effective examples include the following (taken from the reference lists of the PEAs):

- Disturbance, invasion, and reinvasion: managing the weed-shaped hole in disturbed ecosystems
- Native weeds and exotic plants: relationships to disturbance in mixed-grass prairie

- Methylamine/ammonium uptake systems in *Saccharomyces cerevisiae*: multiplicity and regulation
- Resistance to infection with intra-cellular parasites – identification of a candidate gene.

### **Strategy 3: Choose strategically: noun phrase, statement, or question?**

The traditional way to write titles and headings is as a noun phrase: a number of words clustered around one important “head” noun. Below are some examples of this kind of title, with the head nouns shown in bold.

- **Diversity and invasibility** of southern Appalachian plant communities
- Food expenditure **patterns** in urban and rural Indonesia
- **Systems** of weed control in peanuts
- Iron **uptake** by symbiosomes from soybean root nodules
- **Evidence** of involvement of proteinaceous toxins from *Pyrenophora teres* in net blotch of barley.

### **Strategy 4: Avoid ambiguity in noun phrases**

If writers place a string of nouns and adjectives together, to form a title which packs a lot of meaning into a few words, they can sometimes cause problems of ambiguity: more than one possible meaning. This is particularly the case when nouns are used as adjectives, i.e. placed in front of the head word of the noun phrase. To investigate why this is so, let’s consider some examples. The noun phrase germination conditions has only one possible meaning: conditions for germination, and thus it can be used without risk of ambiguity. Similarly, application rate can only mean the rate of application. However, enzymatic activity suppression could mean either suppression of enzymatic activity or suppression by enzymatic activity and is therefore ambiguous. A general guideline is to restrict these noun phrases to a maximum of three words, and this many only if there is no risk of misunderstanding. If they grow longer, rewrite them by inserting the prepositions that clarify the meaning (e.g. of, by, for). For example:

- ☒ **soybean seedling growth suppression**
- ✓ **suppression of soybean seedling growth**

When nouns are used as adjectives in extended noun phrases, they are always used in the singular. Useful examples to help you remember this are as follows.

food for dogs -----dog food  
disturbance by herbivores ----- herbivore disturbance  
nodules on soybean roots ----- soybean root nodules

## **3-2 Abstract**

### **Why Abstracts are so important?**

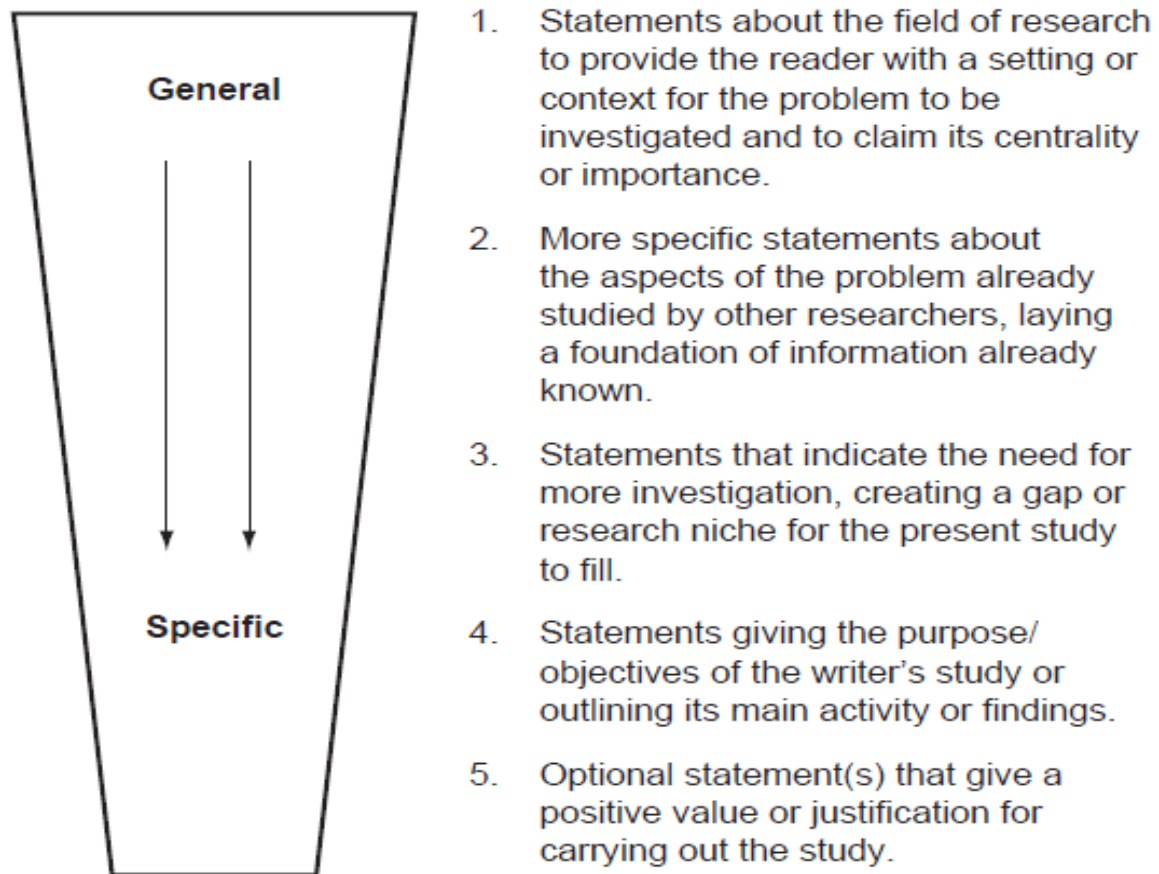
- For busy readers the Abstract, sometimes called the Summary, may be the only part of the paper they read, unless it succeeds in convincing them to take the time to read the whole paper.
- For readers in developing countries with limited access to the literature, the Abstract may be the only information on your work that is available to them.
- Abstracting services may use the text of the title plus the Abstract and keywords
- for their searchable databases

Summary (called the Abstract on the web submission site). This must not exceed 350 words and should list the main results and conclusions, using simple, factual, numbered statements. The final point of your Summary must be headed 'Synthesis', and must emphasize the key findings of the work and its general significance, indicating clearly how this study has advanced ecological understanding. This policy is intended to maximize the impact of your paper, by making it of as wide interest as possible. This final point should therefore explain the importance of your paper in a way that is accessible to non-specialists. We emphasize that the Journal is more likely to accept manuscripts that address important and topical questions and hypotheses, and deliver generic rather than specific messages.

### **3-3 Introduction**

#### **Five stages to a compelling Introduction:**

Applied linguistics researchers have identified five main stages that commonly appear in research article Introductions.



**Fig. 1:** Five stages of an Introduction to a science research article (Weissberg & Buker 1990).

### **3-4 Methods**

Traditionally, students are taught that the Methods section provides the information needed for another competent scientist to repeat the work and should therefore provide enough information about how the work was done for readers to evaluate the results.

**Strategy 1** Use identical or similar subheadings in the Methods and the Results sections.

**Strategy 2** Use introductory phrases or sentences in the Methods that relate to the aims

### **3-5 Results: turning data into knowledge**

The data presentation in a scientific article aims to illustrate the story, present evidence to support or reject a hypothesis, and record important data and metadata. We verify, analyse, and display data to share, build, and legitimize new knowledge. To do this effectively we must present all necessary data in ways which make the most important points most prominent. Data presentation is also an exercise in deciding which datasets or details to leave out of the article. If you have decided to include figures or tables, they should be numbered and presented sequentially and referred to in that order in the text. Many journals now accept additional data which support or extend the story as appendices or supplementary online data. For each data element in your paper you should ask yourself if it is necessary to the story of the paper, or not essential but valuable for those who might access it in an online archive. Remember, the referees will be asked to comment on whether all the tables and figures are necessary, and this will include the supplementary material. Data presentation styles vary with discipline and personal preference and change over time, and there is a large amount of contradictory published advice about what to do, and what looks good. Our aim in this section is not to provide a concrete set of rules for data presentation but rather to help you optimize the presentation of your data to support the story of your article. One over-arching guideline is that tables and figures should “stand alone”: that is, the reader should not need to consult the text of the article to understand the data presented in the table or figure; all necessary information should appear in the table/figure, in the title/legend, or in keys or footnotes. The first reference for style of data presentation is the Instructions to Contributors (sometimes called Instructions to Authors or Author Guidelines, or other similar names) of the journal you intend to submit the article to. Not all Instructions to Contributors provide great detail about data presentation, but they will generally guide you in formatting and preferred style. The next best source of information on data presentation style is articles in recent issues of the journal. You can maximize your chances of meeting the journal’s requirements by analysing the types of data presented, the choice of figures or tables, the choice of figure type, and the amount of data



presented in the text and in the titles and legends. Use the results of your analyses to inform your decisions on the data presentation for your own manuscript.

## **Functions of results sentences**

The text of a Results section typically

- **highlights the important findings;**
- **locates the figure(s) or table(s) where the results can be found; and**
- **comments on (but does not discuss) the results.**

Elements that highlight and locate are sometimes combined in the same sentence, and sometimes appear in separate sentences.

**Examples** of combined highlight + location styles:

- Measurements of root length density (Figure 3) revealed that the majority of roots of both cultivars were found in the upper substrate layers.
- The response of lucerne root growth to manganese rate and depth treatments was similar to that of shoots (Figure 2).

## **Figure, table, or text**

The choice of whether to use a figure, table, or text depends on the point or meaning you want the reader to receive from those data. Each form of data display has strengths and weaknesses.

### **Tables are most useful for**

- recording data (raw or processed data)
- explaining calculations or showing components of calculated data;
- showing the actual data values and their precision; and
- allowing multiple comparisons between elements in many directions.

### **Figures are most useful for**

- showing an overall trend or “picture”
- comprehension of the story through “shape” rather than the actual numbers; and
- allowing simple comparisons between only a few elements.

## **Designing figures**

Design each figure around the point you want to get across most strongly. In an era when authors have access to many computer graphics packages and the ability to produce numerous graphical representations and styles, it is important to take charge of the software and direct it to your purpose. It may be helpful to

determine the design elements you want in the figure before going to the graphics package. This will help you avoid using default settings or template styles which do not meet your needs. In designing your figures you may consider things such as

- which variable needs to have the most prominent symbol or line (heaviest line weighting)
- whether you want to emphasize differences or similarities between elements; and
- what scale, scale intervals, maximum and minimum values, and statistical representations are most meaningful.

The range of common figure types listed below allows you to emphasize different qualities of the data.

- **Pie charts** are effective at highlighting proportions of a total or whole.
- **Column and bar charts** are effective for comparing the values of different categories when they are independent of each other (e.g. apples and oranges).
- **Line charts** allow the display of a sequence of variables in time or space or the display of other dependent relationships (e.g. change over time).
- **Radar charts** are useful when categories are not directly comparable.

## **Designing tables**

Tables are often used to record data and meta-data of a study and may contain a number of rows or columns which require careful reading by the user before the meaning can be appreciated. This is especially true where tables contain a large number of cells and where comparisons between different rows and columns are necessary to understand the story. These potential limitations of tables can be largely overcome by good design, particularly in terms of design of table layout, choice of data for inclusion, ordering of data within the table, and clear and informative row/column headings and table title. Many of the visual design elements are common to those discussed for figures: keep tables free of clutter, and define abbreviations in the title or by using footnotes. In addition, don't box tables, and use horizontal lines as separators and space to separate columns. A review of tables in published articles shows a number of common weaknesses which reduce the power of tables to contribute to the communication of the story:

- weak descriptive titles are used when a story-telling title would be appropriate
- inclusion of unnecessary or redundant data (e.g. data that are not referred to in the text and do not contribute to the story, or columns of a known constant)
- inclusion of non-significant or over-precise numbers (which lead to a false sense of accuracy or clutter, respectively)
- omission of data necessary for the reader to make important calculations from experimental data (omitted from either the tables or text)
- table not arranged to highlight the most significant results
- data not sorted to show important relationships between elements.

### **3-6 Discussion**

The types of information commonly included in Discussion sections are given below: this list can form a checklist for you as you write. You may not have something to say under every point in the list for every result you discuss, but it is worthwhile thinking about each element in turn as you draft the section.

- 1- A reference to the main purpose or hypothesis of the study, or a summary of the main activity of the study.
- 2- A restatement or review of the most important findings, generally in order of their significance, including:
  - whether they support the original hypothesis, or how they contribute to the main activity of the study, to answering the research questions, or to meeting the research objectives; and
  - whether they agree with the findings of other researchers.
- 3- Explanations for the findings, supported by references to relevant literature, and/or speculations about the findings, also supported by literature citation.
- 4- Limitations of the study that restrict the extent to which the findings can be generalized beyond the study conditions.
- 5- Implications of the study (generalizations from the results: what the results mean in the context of the broader field).
- 6- Recommendations for future research and/or practical applications.

### **3-7 Conclusion**

The conclusion is the last part of your thesis or dissertation. Its main purposes are to:

- Clearly state the answer to the main research question
- Summarize and reflect on the research
- Make recommendations for future work on the topic
- Show what new knowledge you have contributed

The conclusion should be concise and engaging. Aim to leave the reader with a clear understanding of the main discovery or argument that your research has advanced. The conclusion contains similar elements to the discussion, and sometimes these two sections are combined (especially in shorter papers and journal articles). But in a thesis or dissertation, it's usual to include a final chapter that wraps up your research and gives the reader a final impression of your work.

The conclusion chapter should be shorter and more general than the discussion. Instead of discussing specific results and interpreting the data in detail, here you make broad statements that sum up the most important insights of the research. The conclusion should not introduce new data, interpretations, or arguments. Depending on the type of thesis, the conclusion should typically be around 5-7% of the overall word count. An empirical scientific study will often have a short conclusion that concisely states the main findings and recommendations, while a humanities thesis might require more space to conclude its analysis and tie all the chapters together in an overall argument.

### **3-8 References**

#### **APA Referencing Style Guide**

Title	Include the title 'References' (one word, beginning with a capital letter, centred, and not in italics)
Indent	Hanging indent your references (space bar in 5 - 7 spaces for the second and subsequent lines of each reference)
Space between references	In general double-space between references
Ampersand	Use for 2 - 6 authors, use "&" before the final author
One author, two publications	Order by year of publication, the earlier one first. Same year of publication for both - add 'a' and 'b' after the year, inside the brackets. Include this in the in text citation. example: Baheti, J. R. (2001a).
URLs	Remove the underlines from URLs so that any underscores ( _ ) can be seen
Same first author, different second author	Order alphabetically by second or subsequent authors
Upper case letters (capital letters)	Journal title - use headline style; i.e. capitalise all the words, except articles and prepositions Book title or article title (in a journal, magazine or newspaper) - use sentence style; i.e. capitalise the first word of the title, and subtitle (after the colon), and any proper names
Place of publication	USA publishers give the city in full and the abbreviation for the state. New York, NY Springfield, MA  Publishers outside the USA: Give the city in full and the country in full London, England Auckland, New Zealand
Page range	Use an en dash, NOT a hyphen, for page ranges: e.g. 21–27. No gaps between the page numbers and the en dash.  How to add an en dash in Microsoft Word, if using a full PC keyboard: Hold the <i>Control</i> key and type the <i>minus sign</i> on the small numeric keypad.  NB: If your keyboard will not produce an en dash, it is acceptable to use a hyphen instead. See the <i>Publication manual of the American Psychological Association</i> (2010,

	p. 97) for more detail on the use of hyphens and dashes in APA style.
Use of square brackets	<p>If format, medium or description information is important for a resource to be retrieved or identified, use square brackets after the title to include this detail:</p> <p>Scorsese, M. (Producer), &amp; Lonergan, K. (Writer/Director). (2000). <i>You can count on me</i> States: Paramount Pictures.</p>

## **Reference examples**

### **One author (a book chapter)**

iston, B. (2008). Does poverty affect health? In K. Dew & A. Matheson (Eds.), *Understanding health inequalities in Aotearoa New Zealand* (pp. 97–106). Dunedin, New Zealand: Otago University Press.

### **One author, multiple works published in the same year**

Rush, E., McLennan, S., Obolonkin, V., Cooper, R., & Hamlin, M. (2015a). Beyond the randomised controlled trial and BMI--evaluation of effectiveness of through-school nutrition and physical activity programmes. *Public Health Nutrition*, 18(9), 1578–1581. <https://doi.org/10.1017/S1368980014003322>

Rush, E. C., Obolonkin, V., Battin, M., Wouldes, T., & Rowan, J. (2015b). Body composition in offspring of New Zealand women: Ethnic and gender differences at age 1–3 years in 2005–2009. *Annals Of Human Biology*, 42(5), 492–497.

### **Two authors (a journal article with doi)**

S., & Seale, C. (2007). Learning to do qualitative data analysis: An observational study of doctoral work. *Qualitative Health Research*, 17(10), 1442–1452. <https://doi.org/10.1177/1049732307306924>

### **Three authors**

arnard, R., de Luca, R., & Li, J. (2015). First-year undergraduate students' perceptions of lecturer and peer feedback: A New Zealand action research project. *Studies In Higher Education*, 40(5), 933–944. <https://doi.org/10.1080/03075079.2014.881343>

- Use "&" before the final author.

### **Four to seven authors**

Szczęśna, A., Nowak, A., Grabiec, P., Paszkuta, M., Tajstra, M., & Wojciechowska, M. (2017). Survey of wearable multi-modal vital parameters measurement systems. *Advances in Intelligent Systems and Computing*, 526. [https://doi.org/10.1007/978-3-319-47154-9\\_37](https://doi.org/10.1007/978-3-319-47154-9_37)

- List all authors in the reference entry

### **More than seven authors**

Kasabov, N., Scott, N. M., Tu, E., Marks, S., Sengupta, N., Capecci, E., . . . Yang, J. (2016). Evolving spatio-temporal data machines based on the NeuCube neuromorphic framework: Design methodology and selected applications. *Neural Networks*, 78, 1-14. <https://doi.org/10.1016/j.neunet.2015.09.011>

## **3-9 Avoiding plagiarism when using others' work**

Another important reason to pay careful attention to referencing is to avoid plagiarizing other people's work unintentionally. Plagiarism is using data, ideas, or words that originated in work by another person without appropriately acknowledging their source. It is generally regarded as a form of cheating in academic and publishing contexts, and papers will be rejected if plagiarism is detected. Incomplete citation also prevents your gaining credit for knowing the work of other researchers in the field. Effective and inclusive citation helps you present yourself as a knowledgeable member of the research community, which can be important in terms of the impression you make on referees evaluating your manuscripts. It also allows others to benefit from the sources of information you have used. Avoiding plagiarism requires writers to do two things: to be aware of the kinds of situations where inadvertent plagiarism is likely to occur; and to develop effective note-taking practices to ensure they remain aware of the status of their notes as they convert them into sentences in a paper for submission.

The important thing to watch for is that it is clear to your reader whether the idea or fact you are using in each and every sentence is your own, or has come from the work of another person. If it comes from someone else's work, cite them! It is possible that the person whose idea it originally was will be a referee of your paper, and they will be sure to notice the problem. In any case, the referees will know the literature well, so it is very important to be accurate in your citation practices. Remember also that direct quotations using quotation marks or inverted commas (“ . . . ”) are extremely rare in science writing. This means that authors

need to paraphrase sentences that appear in the work of other authors, rather than copying them verbatim. However, remember also that you can expand your repertoire of sentence structures by removing the content from sentences that appeal to you and re-using the shell (or sentence template) for your own content.

### **3-10 Considerations when selecting a target journal for publication**

Choosing the right journal for your manuscript will influence the chance of getting published easily and quickly. You should be thinking about the journal you want to publish in from the beginning of your research and should have made a choice by the time you begin to write the Introduction and Discussion sections of your paper. The choice of journal determines the size of the audience who can access and use your work and the professional prestige and rewards which may flow from the publication. The right journal for you is the journal which optimizes the speed and ease of publication, the professional prestige you accrue, and the access for your desired audience. These factors are interwoven and it can be helpful to develop a publication plan to maximize your publication success. One of the first considerations is whether the journal peer reviews the articles that it publishes. The peer-review process is important for establishing the quality of your work, and you should seek peer-reviewed journals to publish in if you wish to develop a research profile. Of course, the journal of your choice may not choose to accept your article, and you are advised to have a list of preferred journals to turn to if you are rejected from your first choice. Here we set out some issues to consider when choosing a journal for your manuscript.

### **3-11 What do you need to know to select your target journal?**

- Does the journal normally publish the kind of work you have done? Check several issues and search the journal website, if it has one. It is helpful if you can cite work from the journal in the Introduction of your manuscript, to show that you are joining a conversation already in progress in the journal.
- Does the journal referee the papers? This is absolutely imperative for enhancing the international credibility of your work. It may also be important to check the journal's impact factor, if this measure is important for assessing research outcomes in your country or research context.



- Does the journal publish reasonably quickly? Many journals include the dates when a manuscript was received and published underneath the title information, so you can check the likely timeline. Others include this information on their websites.
- Are there page charges? Some journals charge authors a fee to publish, or to publish coloured illustrations. Check whether this is the case. If so, you can ask whether the journal is willing to waive these charges for authors in some parts of the world.
- Are members of the editorial staff efficient and helpful? Some journals have information on their website with targeted advice for authors from EAL backgrounds, or you may be able to ask colleagues who have submitted to particular journals about their experiences. It can be especially useful to share this kind of information among colleagues in your laboratory group or work team, perhaps as part of a program to encourage international publication of the work of your institution or group.

## **References**

- Margaret Cargill and Patrick O'Connor, Writing Scientific Research Articles Strategy and Steps (2009), page:22-71

## **Section three**

# **How to design a poster**

## 4-1 Poster

### 4-1-1 Scientifically: (with help of the supervisor)

#### **An effective poster has:**

- Clear objective(s)- (don't jump between them)
- Clear main point(s)- (and concise)
- No repetitious redundancy
- Enough scientific pictures
- No too many pictures
- Good information organization

### 4-1-2 Style and layout

- Poster size A0 Portrait (33.1 x 46.8 in), i.e. (84.1 x 118.9) cm
- An effective scientific poster is:
  - Easy to read
  - Succinct (ABSTRACT)
  - Memorable
  - “Fun”! (interesting, attractive)
  - Visual (DEPICTED ABSTRACT)

An effective Scientific Poster has a balance between **TEXT** and **PICTURES**



- **Text parts** –
  - ✓ In Bullets (not one full paragraph).
  - ✓ Font type (Arial, Times New Roman,...)
  - ✓ Font size: 28 (preferred 32)
- **Pictures**
  - ✓ Right size and resolution.
  - ✓ Creative use of pictures and icons,
- **Aim for clear layout:** clearly identifiable sections, clear ordering from start to finish
- **LARGE**, informative headings

- multiple-column layout may be preferable
  - better for a group of viewers
- Including Kerbala University and Pharmacy College logos in the poster.
- The name of the students and their supervisor including under the research title, then the University and College.

## **AVOID**

- Avoid too much detail
- Avoid irrelevant background textures that obscure the text
- Avoid changing font, using fancy fonts (Rom, Time), Word Art effects & overuse of text colour or Be very sparing with “freaky” graphics & different colours

**Example:**

 <div style="display: inline-block; text-align: center;"> <h2 style="margin: 0;">Research Title</h2> <p style="margin: 0;">Students' name and Supervisors' name</p> <p style="margin: 0;">College of Pharmacy/ University of <u>Kerbala</u></p> </div> 	
<div style="background-color: #cccccc; text-align: center; padding: 5px; margin-bottom: 10px;"><b>Introduction</b></div> <div style="height: 150px; border: 1px solid #ccc;"></div>	<div style="background-color: #cccccc; text-align: center; padding: 5px; margin-bottom: 10px;"><b>Results and Discussion</b></div> <div style="height: 150px; border: 1px solid #ccc;"></div>
<div style="background-color: #cccccc; text-align: center; padding: 5px; margin-bottom: 10px;"><b>Method</b></div> <div style="height: 150px; border: 1px solid #ccc;"></div>	<div style="background-color: #cccccc; text-align: center; padding: 5px; margin-bottom: 10px;"><b>Conclusion</b></div> <div style="height: 150px; border: 1px solid #ccc;"></div>
<div style="background-color: #cccccc; text-align: center; padding: 5px;"><b>References</b></div>	