Al-Mustaqbal University

College of Science

Scientific Thinking and Research Skills

Third Year Students / 1st Semester

How To Write Your Graduation Project, continued

2025-2026

Biochemistry Department

By

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5- Main Chapters

The number of chapters in the graduation project report depending on the specialization or research requirement.

In general, it can be divided as follows:

Chapter One: Introduction

This chapter is ***mandatory*** and, at a minimum, should cover the following topics:

Introduce the reader to the particular problem your project is at tempting to solve. Most projects have multiple objectives.

Introduction should include:

- ✓ Preface Which simply expresses the idea of the project, presents its' goals and importance as well as the reason for choosing this topic. This may be copied from other references related to the subject.

- ✓The Significance and Motivation Where the problem of the project must be explained in general terms and to be understandable.
- ✓Aims and Objectives , The goals of the project must be clearly stated. There might be sub goals besides the main ones.
- ✓Methodology , Scientific methods used in the project must be well defined.

- Literature Review;

As student need to have a good understanding of the relevant published work concerning his/her topic by reviewing major contributions of related studies and articles.

- ✓ Review is very important in evaluating the project work compared to earlier research.

- ✓ Describe similar work done by others in the past and described in the literature. If you cannot find prior work in the literature, then it is most likely that the work you are describing is too simple to qualify as a graduate project.

- ✓ Your Project needs to demonstrate that you have done a literature search and completed a critical analysis of the relevant literature describing prior work in the field.

- Demonstrate this by writing some discussions on what others have done, what they have achieved, and limitations of their work. If they exist, then provide reviews of prior work in the literature, this shows that you have done a comprehensive literature search

- ✓ Do not copy and paste text from the literature; **paraphrase** the contents in your own words.

- ✓ References must be cited here in the introduction and every where else in the thesis. Do not just provide a number like [23]. Say something about the work.

As a cornerstone in preparing a high quality graduation project, the review should be guided by student's research objective and linked at all times to the research purpose and rationale.

Aim

The aim of this project is to develop a new method for drug formulation. Prepare a new dosage form Or Extract new plant materials and so on ..

Chapter Two: Materials and Methods

This chapter includes the following:

- ✓ Description of methods and procedures used: For example, the strategy of collecting samples, experimental design, tools have been used and the reliability of data quality assessment. It is important to mention the name of the method and its' reference, even if the method is very well-known. Also, it is more important to mention whether the method is modified somehow.

- ✓ Description of materials used: Scientific and commercial names of materials and tools used in conducting the project must be detailed with their specifications as well as lab tests.

- ✓Description of programs used: Software complete name and brand (including, producing company number of the issue and the year of production). Organizing programs or documentation programs have to be listed with justification (reason of using this particular program).

Chapter Four: Results and Discussion

This is the most important part of the graduation project report.

In this chapter the results must be summarized, emphasizing the important patterns and trends.

Also, the student may clarify the results through statistics and referring to the tables and figures.

This chapter must include the followings:

- ✓ Present the specific results of the project in an organized and logical way; using the same sequence followed in materials and methods.
- ✓ Show the complete results.
- ✓ Make the maximum usage of tables and figures.
- ✓ Display findings and meaningful data only (no raw data).
- ✓ Relate results to the hypothesis.
- ✓ Connect the data to their explanations.
- ✓ Compare results obtained in this project with the results of other researchers.

Pay attention to the following:

a. Avoid repeating the same result.

b. Avoid omitting negative data and try to find reasonable explanation.

c. Avoid generalizing specific results.

Chapter Five: Conclusion and Recommendations

This chapter covers the following:

- ✓ Conclusions that can be resolved from the specific results of this project.
- ✓ Its importance for the problem to be solved.
- ✓ Implications for practical applications or future studies if applicable.
- ✓ Recommendations.
- ✓ Logical solutions for future works, in case results are not of the best level.

- ✓ In the conclusion chapter summarize the problem you set out to solve,
- ✓ describe what you have achieved, and prospect for future work.
- ✓ Refer back to the problems you encountered and how you overcame those, or found workarounds.
- ✓ Always refer back to the main body of the thesis for the detailed descriptions; the conclusion section should not contain detailed descripti ons of the problems or the solutions.
- ✓ Address how you have met the original objectives of the project (i.e. roposal contents).
- ✓ Discuss potential future work.

In brief, the student must list in this chapter the misconceptions of the used system and suggest ways to overcome these drawbacks. Also, propose ideas and recommendations for future work to complete the non-achieved goals of the project.

References;

References may help in evaluating the strength and efficiency of graduation report.

The level of references is considered as a measurement for gathering data and the ideas used in preparing the background study of the project.

It is recommended to use Hindo-Arabic numbers (i.e. 1, 2, 3…) in listing references based on their sequence keeping in mind that numbers must be put in brackets.

In writing references the following style must be used:

For Scientific Papers: Name of the author. Research title. Name of the issuing site. Name of the journal or the scientific activity. Volume. Year of issue. Page numbers.

EX.,

Ghazy E, Abdulrasool AA, Al-Tamimi JJ, Ayash N. Nebivolol hydrochloride loaded nanostructured lipid carriers as transdermal delivery system: Part 2: Hydrogel preparation, evaluation and permeation study. TJMS 2016;3(2):1-16.

The Appendices

Appendices are where you present material which you want to include in the report, but which would seriously obstruct the flow of ideas if put anywhere in the main body.

Typical contents of appendices include: Code, data tables, detailed analysis and design models. If a user manual is called for, then provide it in an appendix.

This could be extensive technical details or mathematical proofs, derivations of formulae, etc. required to support a point your are making in the report. Other documents you have written, such as user manuals, technical manuals or formal specifications should go here too.

The “Future Work”

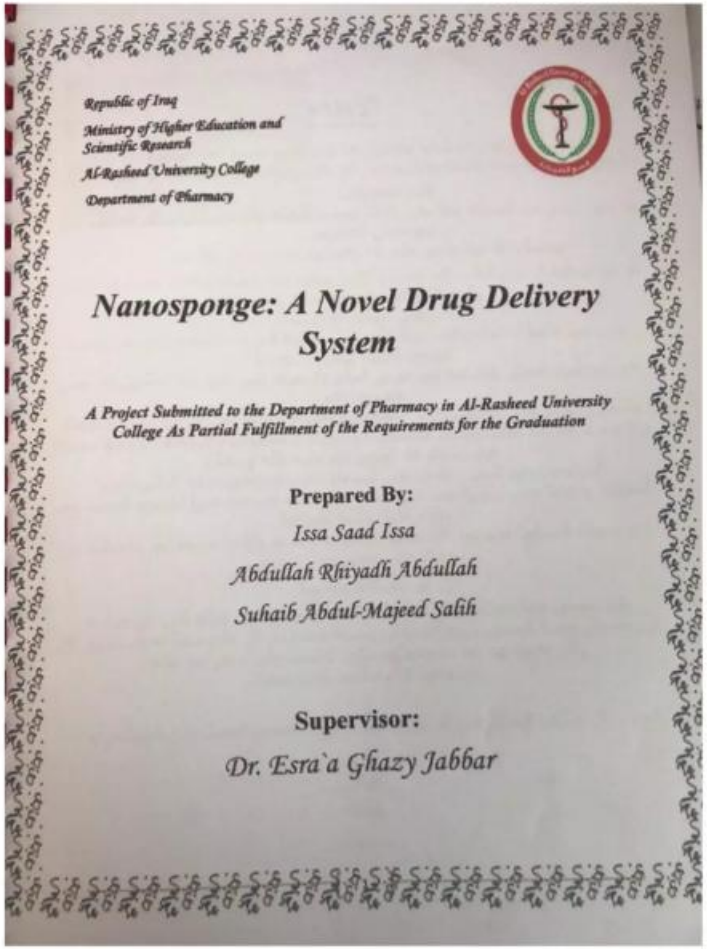
- ✓ It is quite likely that by the end of your project you will not have achieved all that you planned at the start; and in any case, your ideas will have grown during the course of the project beyond what you could hope to do within the available time.
- ✓ The Future Work section is for expressing your unrealised ideas. It is a way of recording that „I have thought about this“, and it is also a way of stating what you would like to have done if only you had not run out of time. A good Future Work section should provide a starting point for someone else to continue the work which you have begun.

Summary

- ✓Successful completion of a graduate Project demonstrates that you have the ability to analyze and develop solutions to a problem of significant com -plexity and stature.

- ✓All good project reports whatever their subject, follow certain well-established conventions and have a similar overall shape.

EX.



Republic of Iraq
Ministry of Higher Education and Scientific Research
Al-Rasheed University College
Department of Pharmacy

Nanosponge: A Novel Drug Delivery System

A Project Submitted to the Department of Pharmacy in Al-Rasheed University College As Partial Fulfillment of the Requirements for the Graduation

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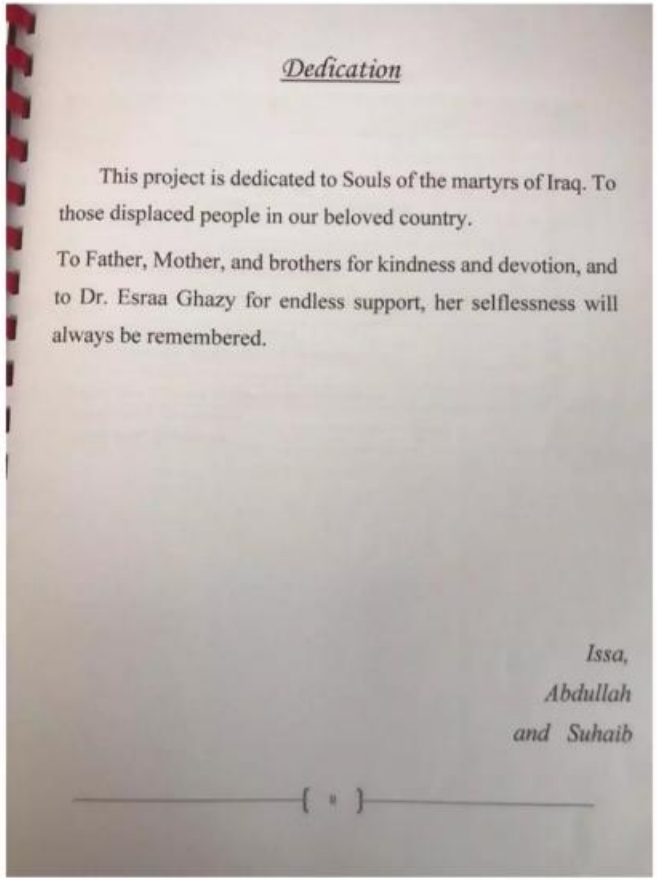

Dedication

This project is dedicated to Souls of the martyrs of Iraq. To those displaced people in our beloved country.

To Father, Mother, and brothers for kindness and devotion, and to Dr. Esraa Ghazy for endless support, her selflessness will always be remembered.

Issa,
Abdullah
and Suhaib

الأهداء

ايام مضت من عمرنا بدأناها بخطوة وها نحن اليوم نقطف ثمار مسيرة
أعوام كان هدفنا فيها واضحا وكنا نسعى في كل يوم لتحقيقه والوصول له مهما
كانت صعوبته...
وها نحن اليوم نقف أمامكم وها نحن وصلنا وبيدينا شعلة علم وسنحرص كل الحرص
عليها حتى لاتنطفئ ...
ونشكر الله أولا وأخير على أن وفقنا وساعدنا على ذلك ...
ثم نتقدم بالشكر إلى القلب الحنون من كانت بجانبنا بكل المراحل التي مضت من تلذذت
بالمعاناه وكانت شمعه تحترق لتنير دربنا
إلى أمهاتنا الحبيبات...
والى من علمنا أن نقف وكيف نبدأ الألف ميل بخطوة إلى يدنا اليمنى إلى من علمنا
الصعود وعيناه تراقبنا ....والدنا
إلى من لهم الفضل بإرشادنا إلى طريق العلم والمعرفه إلى أساتذتنا الأفاضل كم نحن
فخورون بكم ...
وأخص بالتقدير والشكر لمشرفتنا : **الدكتورة إسراء غاري** لمساعدتها لنا على إتمام
هذا البحث وتقديم العون ومد يد المساعدة وتزويدنا بالمعلومات اللازمة و نقول لها بشراك
قول رسول الله (صلى الله عليه وأله وسلم)
"إن الحوت في البحر ، والطير في السماء ، ليصلون على معلم الناس الخير"
أصدقائنا وأحبتنا ومن سهروا معنا في مسيرتنا العلميه إلى من مدوا أياديهم البيضاء في
ظلام الليل وكانوا عونا لنا ...
أيام جميله قضيناها نعيشها الآن لحظة... بلحظة ونشعر وكأنها شريط يمر بمخيلتنا من
حديد عام ..وعام بوما.... ويوم
لن ننساكم ماحيينا...
ولن ننسى هذا المكان الذي جمعنا بمقاعده وأبوابه حتى فنائه إلى كل جزء به
ولن ننسى وطننا المعبق بأريج الحب لن ننساه وسنقدم كل مابوسعنا له وسنجعل كل
ركن به يشهد بما سنقدم وسنكون كالمطر ولن نبخل بما تعلمنا
وسنكون كالماء أينما وقعنا نفعنا...

نخونا كل عبارات الشكر في تقديم مايليق بكم لن ننسى الفضل ولن ننساكم أبدا...

عيسى
عبدالله
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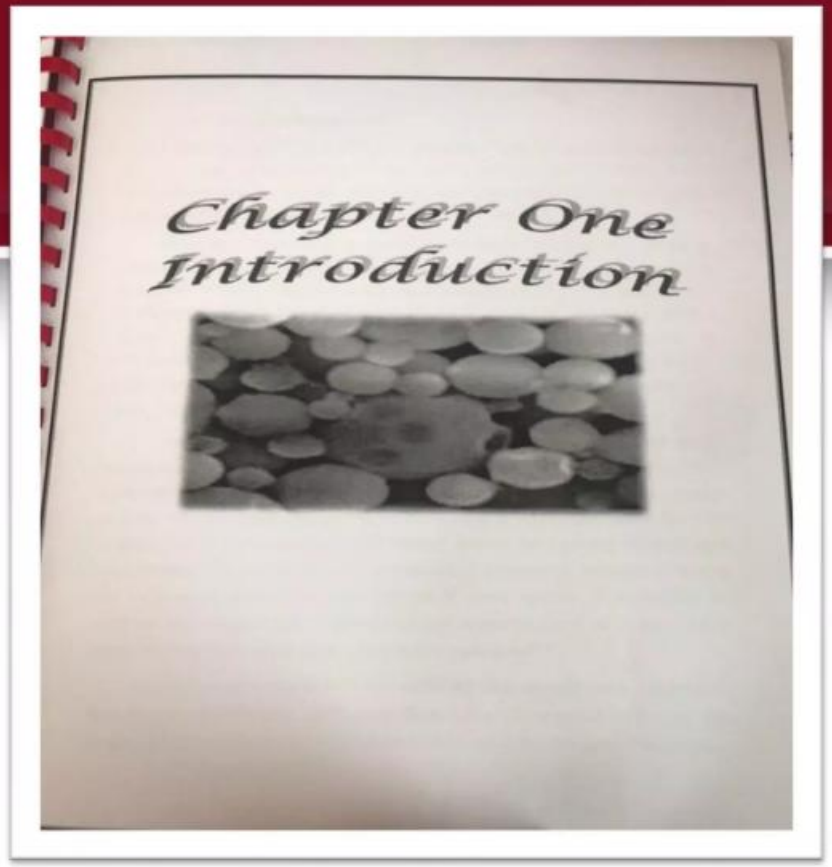
Chapter One
Introduction

I. Introduction

1.1. History of Transdermal Drug Delivery Systems

Since the beginning of creation, human beings have applied a lot of compounds to their skin such as cosmetics and medications. There have been previous reports about the use of mustard plasters to alleviate chest congestion, and belladonna plasters as analgesics. Passive diffusion across the skin is the main mechanism for transporting of medicinal agents, and it represents the basis of transdermal drug delivery[1].

However, until the mid 20th century, practitioners prescribed topical preparations solely for the treatment of skin diseases. During World War II, angina attacks were spotted to be less frequent amongst munitions employees working with nitroglycerin. Subsequently, in 1954, ointment prepared from nitroglycerin was presented for angina the management. This was the first commercial topical product precisely developed to treat a systemic disease. Thirty years later in the early 1980's, FDA approved the first transdermal patches; containing scopolamine and nitroglycerin for motion sickness and angina treatment, respectively[2].

In the broad sense, Transdermal Drug Delivery System (TDDS) encompass all topically administered drug products intended to deliver the medicinal agents into the systemic circulation. So, it can be defined as " discrete, self-contained drug product which when applied to the intact skin delivers the medication through the skin at controlled manner to the general circulation". Moreover, it is recognized as one of the implicit route for the local and systemic delivery of drugs. Several approaches