



By Assist Prof Dr. Zahraa
Biochemistry, Biophysics
<https://orcid.org/0000-0003-3816-2876>

Research Methodology by Dr Al-Garawi *
Chemistry Department

Syllabus

Subject	الموضوع
Introduction	مقدمة عامة عن منهجية البحث العلمي
Research theory and practice	اساسيات البحث العلمي:
Research basis	١- نظرية البحث
1. Research theory	٢- اختيار و تركيب موضوع البحث
2. Structure the project	٣- ماهي اخلاقيات البحث العلمي؟
3. Research ethics	٤- البحث في الادبيات
4. Reviewing the literature	٥- كيفية كتابة البحث العلمي
5. Starting to write	امتحان
Exam	
6.Thesis requirements	٦- متطلبات ومعايير الأطروحة/ الرسالة
7. Thesis preparations	٧- مراحل اعداد الرسالة
8. The standard structure of thesis/ dissertation	٨- تركيب الأطروحة النموذجي للجامعة المستنصرية
9. Guidelines for writing each chapter in the thesis	٩- ادبيات كتابة فصول الأطروحة/الرسالة
10- What next?	١٠- ماذا بعد اعداد الأطروحة/ الرسالة؟
Exam	امتحان

- This course is all about understanding the basics of :
 - 1- designing, doing and writing a research project
 - 2- Structure and writing your thesis.

المصادر

1-	Research methods, the basics by Nicolas Walliman 2011 (book)
2-	The critical steps for successful research: The research proposal and scientific writing, Journal of Pharmacology and Pharmacotherapeutics, 4(2), 2013 (report)
3-	What is Scientific Research and How Can it be Done? Turk J Anaesthesiol Reanim,44,212-8, 2016 (review)

CONTENTS

Introduction

Research theory and practice

Research basis

مقدمة عامة عن منهجية البحث العلمي
اساسيات البحث العلمي: نظرية البحث

What is research?

Research is the careful consideration of study regarding a particular concern or problem using scientific methods.

“research is a systematic inquiry to describe, explain, predict, and control the observed phenomenon”.

- **It involves inductive and deductive methods.”**
- **It is to discover new trends, developing ideas or improving results,**
- Being a researcher is all about doing a practical job as identifying a problem that needs a search for resolving, collecting information and analyzing.

Why do research?

Research allows you to pursue your interests, to learn something new, to hone your problem-solving skills and to challenge yourself in new ways.

How to do research?

- Find a problem that needs a solution
- Make a Hypothesis to solve the problem
- Find the right methods, techniques and tools to confirm your hypothesis
- Methods are to collect, sort and analyze your data so that you can come to some conclusions and suggestions.
- Analyze, explain and argue the results that you've got.
- **When you use the right methods for your research, then your results and conclusion will be valid and convinced and the knowledge you added is soundly based.**

What you can do with research?

How can you use research do to gain new knowledge? it can be used to:

1- Categories. This involves classifying the objects, events or concepts in a set of names or tables that can be sorted. This can be useful in explaining which 'things' belong together and how.

2- Describe. Descriptive research focus mainly on observations on collecting data. It attempts to examine situations in order to establish.

3- Explain. This is to deal with complex issues. It aims to move beyond and read under the lines for just getting the facts, in order to make sense of the elements involved.

4- Evaluate. This involves making judgements about the quality of objects or events. Quality can be measured based on a comparative basis.

5- Compare. Two or more contrasting cases can be examined to highlight differences and similarities between them, leading to a better understanding of phenomena.

6- Correlate. The relationships between two phenomena are investigated to study if they influence each other and how. The relationship might be just a loose link at one extreme or a direct link when one phenomenon causes another. These are measured as levels of association.

7- Predict. This can sometimes be done in research areas where correlations are already known. Predictions of possible future behavior or events are made on the basis that if there has been a strong relationship between two or more characteristics or events in the past, then these should exist in similar circumstances in the future, leading to predictable outcomes.

8- Control. Once you understand an event or situation, you may be able to find ways to control it. For this you need to know what the cause and effect relationships are and that you are capable of exerting control over the vital ingredients. All of technology relies on this ability to control.