

# ETHICS AND RULES OF SCIENTIFIC RESEARCH

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# CONTENT:

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- ❑ **Scientific research:**

  - (concept, importance, objectives, and characteristics).

- ❑ **Ethics of scientific research:**

  - (the most important ethics).

- ❑ **Rules of scientific research:**

  - (basics, curricula, and tools).

# SCIENTIFIC RESEARCH

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# CONCEPT OF SCIENTIFIC RESEARCH

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**Scientific research** is a systematic, logical, objective, accurate, and results based on the foundations and evidence, (a set of rules used to reach the truth in science).

# IMPORTANCE OF SCIENTIFIC RESEARCH

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- Discover** facts.
- Solve** problems.
- Answer** questions.
- Explain** unclear phenomena.
- Modify** incorrect facts.

# OBJECTIVES OF SCIENTIFIC RESEARCH

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- Description:** Describe a phenomenon by gathering information about it.
- Forecasting:** Develop scenarios and possibilities for future developments.
- Explanation:** Explain a particular phenomenon by explaining how and why it occurs.

# OBJECTIVES OF SCIENTIFIC RESEARCH

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- ❑ **Evaluation:** Achieve certain goals for improvement.
- ❑ **Refutation:** Prove a certain hypothesis about a phenomenon by rejecting alternative hypotheses.
- ❑ **Validation:** To determine the fact that a subject has already been raised about a particular phenomenon.

# CHARACTERISTICS OF SCIENTIFIC RESEARCH

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- It arises from a question or problem.
- It requires a clear connection to well-defined objectives.
- It accepts certain assumptions.
- It requires all data interpretation to attempt to solve a problem.



# FUNDAMENTAL OF SCIENTIFIC RESEARCH

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- Define a problem.
- Define research objectives.
- To have research procedures.
- Collect research data.
- Do data analysis.
- Have research results.

# ETHICS OF SCIENTIFIC RESEARCH

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# INTRODUCTION

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**The ethics of scientific research are defined as a set of principles and behavioral values that must be followed and applied by researchers and scholars.**

# INTRODUCTION

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**The ethics of scientific research are essential and important on every single step of the process of conducting a research.**

# INTRODUCTION

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**It requires the researcher to take full responsibility for the ethical behavior of his/her research, ethics is the responsibility of the researcher.**

# **ETHICS OF SCIENTIFIC RESEARCH**

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**Emphasis ought to be engaged on establishing the values of honesty, integrity, justice and transparency, while also establishing the concepts of “responsibility” and “accountability”.**

# **ETHICS OF SCIENTIFIC RESEARCH**

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**The researcher bears full responsibility for each research or scientific experiment he/she carries out.**

# ETHICS OF SCIENTIFIC RESEARCH

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**Concerning the results, they should be honestly transmitted. Encourage the disclosure and reporting of any ethical abuses in research behavior.**



# **ETHICS OF SCIENTIFIC RESEARCH**

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**Raising efficiency, quality and excellence in scientific research (honesty, accuracy, objectivity, credibility, advanced research skills).**

# **ETHICS OF SCIENTIFIC RESEARCH**

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**The necessity to apply disciplined ethical practices in scientific research in accordance with international standards and best practices.**

# ETHICS OF SCIENTIFIC RESEARCH

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**The researcher should be reasonable and neutral in his/her research and discuss others with scientific arguments.**

# **ETHICS OF SCIENTIFIC RESEARCH**

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**Not to involve in any research without having the experience and expertise in that specialization. The researcher should be characterized by a scientific modest personality and receptive to criticism of others.**

# **ETHICS OF SCIENTIFIC RESEARCH**

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**The researcher should base his/her research on honesty, from the beginning until the end.**

# **ETHICS OF SCIENTIFIC RESEARCH**

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**The researcher should endeavor to develop his/her knowledge and the extent of his/her work so others can benefit from it.**

# **ETHICS OF SCIENTIFIC RESEARCH**

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**The researcher should consider if his/her research requires conducting experiments on the environment, especially animals and plants, he/she must deal with the environment gently and according to the laws and regulations governing it.**

# **ETHICS OF SCIENTIFIC RESEARCH**

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**Commitment to the scientific method, its steps and procedures in all stages of research. Researchers are regularly share their findings, data, methods, ideas, techniques and tools with others.**



# ETHICS OF SCIENTIFIC RESEARCH

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**Accept disparagement and assessment of novel ideas, which pushes the development of science.**

# **ETHICS OF SCIENTIFIC RESEARCH**

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**The researcher should adopt professional and scientific method and continuously seek to develop his/her research. Taking into account the scientific honesty, accuracy, and refer to the others in a way that preserves their rights.**

# ETHICS OF SCIENTIFIC RESEARCH

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**Refer to the assistance provided during  
his/her scientific research.**

# **ETHICS OF SCIENTIFIC RESEARCH**

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**To benefit from the opinions of others, especially those who have been experienced in research and have spent a lot of time in conducting scientific research. The necessity to apply impartiality and convey fact and data as it is.**

# ETHICS OF SCIENTIFIC RESEARCH

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**There is no science without scientific research,  
and there is no scientific research that has  
credibility without having ethics and values.**

# **RULES OF SCIENTIFIC RESEARCH**

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# **RULES OF SCIENTIFIC RESEARCH**

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- Select a topic.**
- Prepare a plan.**
- Collect sources and references.**
- Collect scientific material (data).**
- Document and write the research.**

# KEEP IN MIND

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- ❖ **Novelty.**
- ❖ **Accuracy and clarity.**
- ❖ **Details.**
- ❖ **Complete all plan's elements .**
- ❖ **Document the content correctly.**
- ❖ **Recent and variety of references.**



# ELEMENTS OF WRITING A RESEARCH PLAN:

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- Research Title.
- Introduction.
- Previous studies.
- Research importance.
- Research aims.
- Methodology
- Timetable.
- List of references.

## **COMMON PROBLEMS RELATED TO THE DETERMINATION OF THE SUBJECT:**

- ❖ **Choosing a general and undefined topic.**
- ❖ **Choosing a topic that is far from your specialization.**
- ❖ **Choosing a topic does not fit with the trends of the researcher.**
- ❖ **Choosing a topic that does not have sufficient references.**
- ❖ **Choosing a topic that does not fit the interests of your advisor.**

## **IMPORTANT QUESTIONS BEFORE SELECTING A TOPIC:**

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- ❖ **Can I write a research topic?**
- ❖ **Will it add some to knowledge to the field of interest?**
- ❖ **Is it worth your effort?**
- ❖ **Do you have the ability to do everything related to it?**
- ❖ **Can you do everything to do and complete the research?**

# ORGANIZATIONAL CONTENT OF SCIENTIFIC RESEARCH:

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- Abstract.
- Introduction.
- Previous studies.
- Methodology
- Results.
- Discussion.
- Conclusion.

## **WHEN WRITING REFERENCES, CONSIDER THE FOLLOWING:**

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- ❖ **Although different methods are used to document references, they should contain: Author Name(s), Research Title, Journal Name, Publisher, Year of Publication, Page Numbers.**
- ❖ **Notice the alphabetical order.**
- ❖ **Follow one of the accepted scientific methods.**
- ❖ **Write down all the resources used.**

# TIPS

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- ❖ **Choose regular hours per week for writing and stick to it, pick the most appropriate time.**
- ❖ **Exchange opinions with colleagues and specialists.**
- ❖ **Read the most recent scientific references related to the subject of research.**

# TIPS

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- ❖ **Avoid long paragraphs and sentences. Try to make paragraphs easy to understand.**
- ❖ **Read the final version of your research several times, and benefit from the comments and responses of your fellow researchers and other specialists.**

# What makes a great researcher?

- ❖ Great knowledge.
- ❖ Good ideas.
- ❖ Great communication.
- ❖ Good writing.
- ❖ Good plan.



# SCIENCE ARTICLES: A GUIDE

|                           | AVERAGE SENTENCE IS EASY TO UNDERSTAND | AVERAGE SENTENCE IS HARD TO UNDERSTAND |
|---------------------------|--|--|
| SUBJECT MATTER IS COMPLEX | GREAT WRITING                          | TYPICAL WRITING                        |
| SUBJECT MATTER IS SIMPLE  | HONEST WRITING                         | PROBABLY JUST BULLSHIT                 |

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**THE MOST IMPORTANT  
THING IS TO JUST BE  
GOOD AT WHAT YOU DO**