

Higher Institute of Earthquake studies and Research

Department: all departments

Course : Scientific research

Contact Hours: 2 Hours Weekly

Teaching Staff:

Description:

The course is 15 chapters. It starts by Describing data & (central tendency standards)& (measures of dispersion), Statistical relationships (correlation and regression), Some probability distributions and their applications & Hypothesis testing, Introduction A summary of the scientific method in the search, standards and norm experimental and field work, Stages of scientific research and the benefits of references and literature study, the stage of research and preparation components Plan, Research Methodology & Research stages, Classical phases, Characteristics of a hypothesis, Role of simulation, Scientist vs. Engineer

Aims & Objectives:

This course aims to form the basis theory in the preparation of the draft Scientific Research (Master's thesis or PhD) for first-year students in the Master of the three departments, and how to write a scientific report about a scientific problem.

Determination of the Problem Statement, Purposes, Benefits ,Theory, Assumptions, Background Literature

Syllabus:

Chapter 1: **Targeted educational outcomes**

Chapter 2: **Describing data & (central tendency standards)& (measures of dispersion)**

Chapter 3: **Statistical relationships (correlation and regression)**

Chapter 4: **Some probability distributions and their applications & Hypothesis testing**

Chapter 5: **Introduction A summary of the scientific method in the search**

- The priorities of the scientific method
- Choosing the subject of research - Viewing previous studies
- determining the research problem - determining the main ideas
- Processing the results and discuss the results - Conclusions.

Chapter 6: **Prepared by the researcher**

- Prepared by the researcher.
- Attributes that should be provided in the Finder.
- Sources of errors in the scientific-research organization of collective research.

Chapter 7: **standards and norm experimental and field work**

- Experimental work norms
- The importance of consistency and accuracy in the selection of transactions experimental work The importance of the system to record results
- The importance of accuracy in the measurement and the choice of means of measurement.

Chapter 8: **Stages of scientific research and the benefits of references and literature study**

- The stage of the preparation of the research plan
- The stage of development of indicators and benchmarks
- Writing Theory and the drafting stage

Chapter 9: **the stage of research and preparation components Plan**

- Find the title and sources to choose research topics: doctoral dissertations and Master -reports and statistics-books and references-articles and scientific journals Liaise with experts and specialists
- Introduction - identify the problem: Is the problem searchable? - Is originality in the research problem exists -When the subject is authentic
- Study assumptions and basic tenets - the formulation of hypothesis-defined types of argument hypotheses-hypotheses relationship with facts, theories and laws.
- The objectives and the importance and scope and Research Methodology, the research community and the sample-previous studies
- Definition of Terms structure search – References Chapter

10: **Research Methodology & Research stages**

- First, the preparatory phase:

- Second phase of field Collecting data from the field - the different ways available
- Third: the final stage include: Unloading and classifying and analyzing devices, the writing of the final report of the study- writing references Seat- attachments supplements (if any)
- Factors influencing the choice of research problem
- Sources to choose the subject of research
- The formulation of the research problem

Chapter 11: Brainstorming

- Powerful tool for design teams
- Used to generate ideas in a group
- Can be used on any sub-problem
- It is best after knowing the main design requirements

Chapter 12: Classical phases

- Research question / problem
- Background / observation
- Formulate hypothesis
- Design experiment
- Test hypothesis /collect data
- Publish finding

Chapter 13: Characteristics of a hypothesis

Chapter 14: Role of simulation

Chapter 15: Scientist vs. Engineer

Instructional Methodology & Teaching Resources:

Lectures, examples, applications

Head of Department:

Date:

Head of Department:

Date:

Head of Department:

Date:

Vice dean:

Date:

Dean:

Date: