

Session - 1

Session Name: **RULES OF QUANTIFICATION**

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Department: **Philosophy**

Subject/Course: **Western Logic 2**

Course Code: **CC 9**

Level of students: B.A Philosophy (Hons) 4th Semester



Session Objectives: At the end of this session of one hour, students should be able to:

1. Recall Proposition and its types
2. Exemplify Universal and Existential Proposition
3. Describe the nature of quantifier
4. Analyze Universal and Existential quantifier
5. State key rules of quantification
6. Compare Rules of Instantiation and Generalization

Teaching Learning Materials

Black Board and Chalk

Handouts with examples and exercises

Session Plan:

Time (min)	Content	Learning Aid and Methodology	Faculty Approach	Typical student Activity	Learning Outcomes (Blooms)
10	Introduce the topic: Proposition	Discussion, Black Board and Chalk	Lecture, Explanation.	Listens, Takes note, Discusses	Remembering of subject matter and increased curiosity
10	Nature of General and Singular proposition	Discussion, Black Board and Chalk, Use of real Examples.	Asking questions to check student's awareness and grasp on the lecture.	Listens, Takes Note, Participates	Remembering Understanding
15	Introduce the concept of quantifier: Universal and Existential	Discussion, Black Board and Chalk.	Explains	Listens, Takes note, Participates, Analyzes, Discusses	Remembering Understanding Analyzing
15	Analyze the rules of quantification and compare these rules	Discussion, Black Board and Chalk, use of examples.	Facilitates Explains	Listens, Takes note, Articulates Analyzes Discusses	Applying Analyzing Evaluating
10	Conclusion and Summary	Distinction between U.I & E.I ;and E.I & E.G.- four fundamental rules of quantification	Monitors Facilitates	Participates	Remembering Understanding Applying

Session Input:

Concept of Rules of Quantification:

In logic, the rules of quantification are used to govern the use of quantifiers, such as “for all” and “there exists,” in logical statements. Here are some of the key rules; Universal Instantiation, Universal Generalization, Existential Instantiation and Existential Generalization. These rules provide a foundation for working with quantifiers in logic and are essential for constructing and evaluating arguments.

Suggested Activity:

Students listen the speech with attention and discuss among them.

Rules of Quantification as a Development Process:

1. Problem Definition: Identify a problem or question that requires quantification.
2. Hypothesis Formation: Formulate a hypothesis or conjecture related to the problem.
3. Variable Identification: Identify the variables involved in the hypothesis.
4. Data Collection: Collect data relevant to the variables.
5. Quantification: Develop a mathematical representation of the hypothesis using quantifiers (e.g., $\forall$, $\exists$).

Suggested Activity: They see the presentation, write some points and discuss among them. They understand also the process of development for application of rules of Quantification .

Need for Rules of Quantification

1. Analyze complex systems: Quantification theory helps to understand and model complex relationships in fields like physics, engineering, and economics.
2. Make predictions: Quantification theory enables predictions based on mathematical models, informing decision-making in various fields.
3. Evaluate hypotheses: Quantification theory allows for the testing and validation of hypotheses, ensuring that conclusions are based on empirical evidence.

4.Optimize processes: Quantification theory facilitates optimization in fields like operations research and machine learning.

5.Understand uncertainty: Quantification theory provides tools to deal with uncertainty, enabling robust decision-making.

6.Improve communication: Quantification theory promotes clear communication among researchers, practitioners, and stakeholders.

Suggested Activity: They listen carefully and understand the need for Quantification Theory. They can also discuss between them after the class about this topic.

Summary

In this session, we learnt:

Evaluating the educational needs of students

Formulating objectives and learning goals

Choosing content topics and learning experiences

Determining instructional methods and the order of instruction

Evaluating students outcomes and the entire process of Quantification Theory.

Adapting plans to meet the needs of students, who may learn at different rates and have different learning styles.

Assignment:

What is Quantifier? (CO1)

State four key rules of Quantification (CO2)

Analyze the need for Quantification Theory (CO4)

References:

1.Introduction to Logic (13th edn.): I.M. Copi & C. Cohen

2.Symbolic Logic: I.M. Copi

3.Methods of Logic (Part I, Chs 5,7,9): W.V.O. Quine

4.Introduction to Logic and Scientific Method: Cohen & Nagel