

Unit 1: Introduction To Logic



Why Study Logic?

- *Learn correct reasoning and the ability to follow long chains of reasoning*
- *Improve GRE, MCAT, LSAT scores*
- *Fulfill a University requirement*

What Logic Is All About

- *Logic is concerned with arguments*
- Argument- a set of sentences consisting of one or more premises, which contain the evidence, and a conclusion, which is supposed to follow from the premises.

Good vs. Bad Arguments

- ***The purpose of logic is to determine which arguments are good/bad, correct/incorrect, valid/invalid***
- Valid Deductive Arguments- the truth of the premises absolutely guarantees the truth of the conclusion.

Example Arguments

- Example 1:
 1. If you study for the exam then you will pass.
 2. You did not study for the exam.
 3. Therefore, You did not pass the exam.
(Valid/Invalid)

Example 2:

1. If you study for the exam, then you will pass.
2. You did study for the exam.
3. Therefore, You passed the exam. (Valid/
Invalid)

Induction and Deduction

- Deductive arguments provide total support for their conclusions.
- Inductive arguments provide probable support for their conclusions.

Example: (Deductive Argument)

- 1. Either you will pass logic or you will fail.
- 2. You did not fail logic.
- 3. Therefore, you passed logic.
- [Truth of the premises guarantees the truth of the conclusion]

Example: (Inductive Argument)

1. Students who study tend to score 80% or higher on 95% of their exams.
2. Nikolaus studied for all his exams.
3. Therefore, Nikolaus scored 80% or higher on 95% of his exams.

[Truth of the premises only makes it more likely that Nikolaus received an 80% or better on the majority of his exams.]

Form and Validity

- In a valid deductive argument, there is no way that the premises can all be true and the conclusion false.
- An argument is invalid if it possible for all its premises to be true and its conclusion false.
- To say that it is possible or impossible for an argument to have true premises and a false conclusion is to question the FORM of the argument-certain argument forms guarantee the truth of the conclusion if the premises are true, and others (many others) do not.

Example 1: Form and Validity

1. Either I will have Chinese for dinner or Italian.
2. I did not have Chinese.
3. Therefore, I had Italian.

Example 2: Form and Validity

1. If Bill Clinton was president in 1993, then Al Gore was Vice-President in 1993.
2. Al Gore was Vice-president in 1993.
3. Therefore, Bill Clinton was President in 1993.

Truth and Validity

- Valid argument: argument which has a valid argument form. A valid argument simply makes the assertion that IF the premises are true, then the conclusion will be true as well. It does not state that the premises are in fact true. Thus, content is irrelevant to validity.
- ***Sound argument: a valid argument in which the premises are in fact true.***

Since logic concerns itself with form and not content it is possible to have valid arguments with false conclusions and false premises. (See Klenk p.