

# Outline

## What is Logic?

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① What is Logic?

② Why Study Logic?

## A Short Answer

And More Questions

### Answer

Logic is the science of correct **inference**

Important Questions:

- ① What exactly is meant by *inference*?
- ② What **kind** of science?
- Let's consider each of these questions in turn

## What is an Inference?

Premises and Conclusions

### Inference

- Moving from some **premises** to a **conclusion** is called an **inference**
- We makes many inferences everyday, often without realizing it:

### An Example Inference

- ① If I touch the hot stove burner it will hurt really bad (Premise)
- ② I should avoid doing things that hurt really bad (Premise)
- ③ I should avoid touching the hot stove burner (Conclusion)

# What is Inference?

The Good & the Bad

- But, not all inferences are created equal

## Inference 1

- 1 All humans are mortal
- 2 Socrates is human
- 3 So, Socrates is mortal

## Inference 2

- 1 Some politicians are corrupt
- 2 Al Gore is a politician
- 3 So, Al Gore is corrupt

- Inference 1 seems **correct**, while Inference 2 seems **incorrect**

# Inference & Argumentation?

Questions About Inference

## Questions About Inference

- 1 What makes some inferences correct and others incorrect?
- 2 What, if any, patterns do inferences adhere to?
- 3 Can inferences be decomposed into smaller ones? If so, which ones?

- Over the course of the semester we will develop answers to all of these questions

# What is Inference?

More on Inference

- Not all inferences are correct
  - The example we just considered makes this clear
- What is it that makes one inference better than another?
- Lots of things might influence whether or not you're an inference seems correct:
  - How believable the premises are
  - How insulting the conclusion is
  - How much you respect the opinion of its proponent
  - How attractive you find its proponent
  - How much you care
  - And so on ...

# Inference

Objective Criteria

- In this class we will study a more objective criterion for judging the correctness of an inference
- This will open up a different way of looking at **arguments**
  - Instead of being verbal abuse or name calling, an argument can be seen as the presentation of an inference with the intent to convince the audience of the inference's conclusion
- This opens up a different way of **evaluating** arguments:
  - An argument should not be counted as convincing unless it is supported by a correct inference

# Inference

## Summary

### Summary

- 1 Logic is the science of **correct inference**
- 2 Inference is a move from one or more **premises** to a **conclusion**
- 3 We will think of arguments as inferences and evaluate them with the same objective criterion we will develop for evaluating inferences

# What Kind of Science?

## Logic is an Abstract Science

- What kind of science is Logic?
  - Logic is an **abstract** science like mathematics or economics
  - Logic is not a physical science like biology, chemistry or neuroscience
  - Abstract sciences deal with abstract **patterns**
  - Physical sciences deal with observable real-world events and substances

# The Focus of Phil 2310

## Intro Logic

- Phil 2310 is an introduction to the classical **theory** of correct inference
- The primary goal is for you to learn the leading theory of what makes inferences correct or incorrect
- The hope is that this will also help you to recognize correct inferences when you encounter them in everyday life

# Why Study Logic?

## What's the Point of Logical Theory?

- Is there any point to learning the **logical theory** other than improving practical reasoning skills?
- Yes
  - Science and rational progress presuppose that there are objective standards for evaluating arguments
  - The concepts of logical theory are responsible for the modern computer & numerous revolutions in the cognitive sciences
    - Artificial Intelligence
    - Linguistics
    - Psychology
    - Philosophy
    - The social sciences
  - So, knowing some logical theory is just part of being a modern educated human!