Nature, Scope and Utility of Logic

Dr. Desh Raj Sirswal, Assistant Professor (Philosophy), P. G. Govt. College for Girls, Sector-11, Chandigarh
http://drsirswal.webs.com
Today, logic is both a branch of philosophy and a branch of mathematics. It is applications as well known in the area of artificial intelligence.

**Etymological definition**
- Gk term “logike’ which means “thought”.
- means a “treatise pertaining to thought”.
- coined by Zeno, the Stoic.
- Aristotle considered logic as an “organon” or the instrument of sciences. For him, logic is an instrument for gaining knowledge or the tool of correct thinking.
- it is a science because it is a systematized body of knowledge about principles and laws of correct inferential thinking. It follows certain rules and laws in arriving at valid conclusions.
Logic is a branch of Philosophy, dedicated to the study of reasoning. Logic is the study of the methods and principles used to distinguish correct reasoning from incorrect reasoning. The word derives from Greek logike, means “possessed of reason, intellectual, dialectical, argumentative”, from logos equivalent to “word, thought, idea, argument, account, reason, or principle”. The aim of the logic is to provide methods, techniques and devices which help in differentiating right reasoning from wrong reasoning and good reasoning from bad.
History of Logic

While many cultures employ intricate system of reasoning, it is generally agreed that Logic as an explicit analysis of the methods of reasoning was independently developed by only three traditions: **CHINA, INDIA, and GREECE**.

In China, a contemporary of Confucius, **Mo Zi** “Master Mo” is credited for founding the Mohist School, whose canons dealt with issues relating to valid inference and the conditions of correct conclusions.
The “Nyayassutras” of Gautama represent the basic texts of one of the six Orthodox schools of Indian philosophy. This realist school worked out a rigid five-member schema of inference involving an initial premise, a reason, an example, an application, and a conclusion.
In Greece, Aristotle’s collection of works known as the “Organon” or instrument almost *ex nihilo* (out of nothing) created discipline known as logic. Aristotle was also the first to devise the systematic criteria for analyzing and evaluating arguments. His logic is called “syllogistic logic”, and its fundamental elements are: terms, propositions, and arguments.

- **Aristotle** (c. 384 – 322 B.C. is generally credited as the *father of logic* being its founder.)
In certain sense the name of Boethius (B. Severinus Boethius, 470–525 A.D.) constitutes a landmark in the history of logic: for it was through the medium of his translation of the Organon, and his contemporaries on the Categories and the Isagoge, that the works of Aristotle and Porphyry were available for educational purposes in Western Europe from the 6th to the 13th century.
Aquinas & Bacon

- St. Thomas Aquinas wrote extensive commentaries on the logical works of Aristotle. From them, we received our comprehensive science of logic.

- Francis Bacon (1561–1626 A.D.) – wrote the *Novum Organon*. He introduced the theory of induction which John Stuart Mill (1806–1873 A.D.) developed into a general theory for scientific investigation.
George Boole (1815–1864 A.D.) – showed the relationship of mathematics and logic in “Mathematical Analysis of Logic” (1847), and “Investigation of the Laws of Thought” (1854). – considered as the founder of Symbolic Logic; its chief exponent in English speaking countries were Alfred North Whitehead (1861–1947) and Bertrand Russell (1872–1970), author of Principles of Mathematics (1903).
Utility of Logic

- There are some points which highlights the utility of logic:
- Logic develop intellectual capacity.
- We can rectify the mistakes in our arguments.
- Logic is the Science of Sciences.
- The study of logic is a part of true Education.
- Logic is useful in everyday life.
- Logic can help us in explaining and demonstrating truth.
Our course primarily to acquaint the students with the basics of what is known as classical logic or classical first order logic and sometime also called as formal logic, because proponents of this logic mostly believe that statements in natural language have underlying logical forms. In their view, the expression in logic exhibit these latent deep structures or the logical forms. If the deep structures of the form is correct, only then a piece of reasoning in natural language is valid.

References:
A Class–Room Introduction to Logic
http://niyamaklogic.wordpress.com
Copi, Cohen, Jetli & Prabhakar: Introduction to Logic.
Chhanda Chakraborti: Logic: Informal, Symbolic & Inductive.
Krishana Jain: A Text Book of Logic.