Logic II

PEIMS Code: N1290101

Abbreviation: LOGIC2

Grade Level(s): 9-10

Award of Credit: 0.5

State Approved Innovative Course

- Districts must have local board approval to implement innovative courses.
- In accordance with Texas Administrative Code (TAC) §74.27, school districts must provide instruction in all essential knowledge and skills identified in this innovative course.
- Innovative courses may only satisfy elective credit toward graduation requirements.
- Please refer to TAC §74.13 for guidance on endorsements.

Course Description:

Logic II is a course in formal logic, or the logic that pertains to pure reasoning in the abstract--deductive reasoning, valid or invalid arguments, and certainty (given the premise). In *Logic II*, students will learn about Aristotelian logic, and they will engage in the world of syllogism where focus is placed on understanding the form and structure of an argument and arguments that can be analyzed using symbols. Students will build on those skills as they construct their own syllogisms and practice real-world application of structured deductive logic.

Essential Knowledge and Skills:

(a) General Requirements. This course is recommended for students in grades 9 and 10. Recommended prerequisite: *Logic I*. Students shall be awarded one-half credit for successful completion of this course.

(b) Introduction.

(1) *Logic II* complements thinking, writing, and speaking skill-building that is at the center of language arts and social studies curricula. It also complements Latin in its precision of language, and it relates to logic inherent in mathematics courses, in particular proofs and deductive reasoning.

(2) *Logic II* is a course in formal logic, or the logic that pertains to pure reasoning in the abstract--deductive reasoning, valid or invalid arguments, and certainty (given the premise). In *Logic II*, students will learn about Aristotelian logic, and they will engage in the world of syllogism where focus is placed on understanding the form and structure of an argument and arguments that can be analyzed using symbols. Students will build on those skills as they construct their own syllogisms and practice real-world application of structured deductive logic.

(3) Statements containing the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.

(c) Knowledge and Skills.

(1) Introduction to Formal Logic. The student understands the various categories of logic and its historical development. The student is expected to:

(A) describe the differences between informal and formal logic;

(B) recognize the differences between deductive and inductive reasoning;

(C) explain categorical and propositional logic; and

(D) explain the classical origins and medieval recovery of logic and summarize the development of logic from Aristotle to modern times.

(2) Formal Logic and Three Acts of the Mind. The student understands the nature of formal logic and the acts of the mind. The student is expected to:

(A) analyze the nature, and fundamental characteristics and principles, of formal logic; and

(B) describe the three acts of the mind, including apprehension, judging, and reasoning.

(3) Translating Propositions into Categorical Form. The student understands propositions and translates arguments. The student is expected to:

(A) define argument translation, categorical forms, and propositions; and

(B) translate arguments into categorical form by finding the subject term and the predicate term, identifying quantity and quality, and supplying the proper quantifier.

(4) Relationships of Opposition. The student identifies relationships of opposition. The student is expected to identify square of opposition, contradiction, contrariety and subcontrariety, subimplication and superimplication, and the square of opposition and inference analysis.

(5) Relationships of Equivalence. The student recognizes logical equations and relationships of equivalence. The student is expected to:

(A) perform logical equations using truth tables; and

(B) analyze and discuss the obverse relationship, the converse relationship, and contraposition.

(6) Syllogism and Validity. The student understands syllogisms and validity. The student is expected to:

(A) arrange syllogisms;

(B) explain categorical syllogisms;

(C) analyze and discuss enthymemes; and

(D) discuss and explain moods and figures of syllogism.

(7) Determining the Validity of Syllogisms. The student understands how to determine whether any given syllogism is valid or invalid.

(A) describe and apply the validity and counterexample model; and

(B) evaluate and establish validity by following the terminological and the qualitative rules.

(8) Definitions and Disagreements. The student uses logic to make statements of truth. The student is expected to:

(A) identify types of disagreements and definitions;

(B) describe the difference between extension and intention;

(C) explain modes of definition;

(D) discuss and describe presuppositional disputes; and

(E) determine truth statements via logic.

Recommended Resources and Materials:

Adler, Mortimer. *Ten Philosophical Mistakes*. New York: Macmillan Publishing Company. 1997.

Cothran, Martin. *Traditional Logic I* (charter school edition). Louisville: Memoria Press, 2018

Cothran, Martin. *Traditional Logic II* (charter school edition). Louisville: Memoria Press, 2018

Hodge, Joelle, Johnson, Shelly, and Larsen, Aaron. *The Discovery of Deduction*. Camp Hill: Classical Academic Press, 2009.

Hodge, Joelle, Larsen, Aaron, and Perrin, Chris. *The Art of Argument: An Introduction to Logical Fallacies*. Camp Hill: Classical Academic Press, 2022.

Kreeft, Peter. 2010. *Socratic Logic: A Logic Text using Socratic Method, Platonic Questions, and Aristotelian Principles*. South Bend: St. Augustine Press, 2010.

Recommended Course Activities:

Students will engage in class discussions, debates, reading and analysis of philosophical works, speeches, editorials, and other print media and marketing campaigns, and expository writing activities.

Suggested methods for evaluating student outcomes:

Formative and summative assessments will be used to evaluate student performance. Assessment will include short written responses, extended essays, multiple-choice items, oral assessment (student interview), debate, and research papers. Rubrics will be used to score essays, papers and projects.

Teacher qualifications:

- English Language Arts and Reading: Grades 7-12
- English Language Arts and Reading: Grades 8-12
- Grades 6-12 or Grades 9-12--English
- Grades 6-12 or Grades 9-12--English Language Arts, Composite
- Secondary English (Grades 6-12)
- All-Level Speech and Drama.
- All-Level Speech Communications/Theatre Arts (Prekindergarten-Grade 12).
- Grades 6-12 or Grades 9-12--Speech Communications.
- Junior High School (Grades 9-10 only) or High School--Speech.
- Junior High School (Grades 9-10 only) or High School--Speech and Drama.
- Secondary Speech Communications (Grades 6-12 or Grades 9-12).
- Speech: Grades 7-12.
- Speech: Grades 8-12.

Logic II

- Grades 6-12 or Grades 9-12--History
- Grades 6-12 or Grades 9-12--Social Studies
- Grades 6-12 or Grades 9-12--Social Studies, Composite
- History: Grades 7-12
- History: Grades 8-12
- Secondary History (Grades 6-12)
- Secondary Social Studies (Grades 6-12)
- Secondary Social Studies, Composite (Grades 6-12)
- Social Studies: Grades 7-12
- Social Studies: Grades 8-12
- Grades 6-12 or Grades 9-12—Psychology

Additional information:

N/A