



MASTER COURSE OUTLINE

A. PHIL 1100 Logic

B. COURSE DESCRIPTION:

This course introduces the student to formal logical reasoning. Students learn how to translate sentences from a natural language into a formal logical language, and use truth-functional logic and natural deduction systems to prove logical concepts. Additionally, students may study syllogistic logic, quantification theory, informal fallacies, and/or principles of inductive reasoning pertaining to analogy, enumerative induction, and hypothesis testing.

MnTC (Goals 4/MA and 2/CT); (3 Credits—3 lecture, 0 lab)

C. *MnTC Discipline: Mathematical/Logical Reasoning **Core Theme: Critical Thinking

D. MAJOR CONTENT AREAS:

- Characteristics and types of argument
- Presentation of arguments in standard form
- Translation of natural language arguments into symbolic language; translations may go on to include predicate and quantification representation
- Propositional logic, including truth tables and/or trees
- Natural deduction proofs
- Selected special topics such as quantification, informal fallacies, induction, probability, definition type, syllogistic logic, modal, deontological, epistemic, or other special logics or applications

E. GOAL TYPES, OBJECTIVES, AND OUTCOMES:

<u>GOAL</u>	<u>OBJECTIVES</u>	<u>OUTCOMES</u>
<u>MnTC Goal 2a</u>	Students will be able to gather factual information and apply it to a given problem in a manner that is relevant, clear, comprehensive, and conscious of possible bias in the information selected	The student will successfully 1. assess the logical properties (including validity and strength, soundness and cogency) of various deductive and inductive arguments 2. justify claims of truth against possible charges of bias
<u>MnTC Goal 2b</u>	imagine and seek out a variety of possible goals, assumptions, interpretations, or perspectives, which can give alternative	1. analyze the truth values of statements 2. justify choice of methodology in proof construction,

	meaning or solutions to given situations or problems	acknowledging the alternative methods thus dismissed
<u>MnTC Goal 2c</u>	analyze the logical connections among the facts, goals, and implicit assumptions relevant to a problem or claim and generate and evaluate implications that follow from them	<ol style="list-style-type: none"> 1. demonstrate the implied conclusion given specific premises 2. distinguish between sufficient and necessary conditions 3. express the necessary assumptions underlying various arguments
<u>MnTC Goal 4a</u>	illustrate historical and contemporary applications of mathematical and logical systems	present a variety of formal proofs of validity (representing different historical applications) in response to problems given to them in both natural language and symbolic representation
<u>MnTC Goal 4b</u>	clearly express mathematical or logical ideas in writing	represent arguments in standard form and translate ordinary- language arguments into symbolic representation
<u>MnTC Goal 4c</u>	explain what constitutes a valid mathematical or logical argument or proof	express in writing the nature of formal validity
<u>MnTC Goal 4d</u>	apply higher-order problem solving or modeling strategies	<ol style="list-style-type: none"> 1. identify the parts of an argument (such as its premise[s] and conclusion); distinguish between argument types 2. construct logical truth tables, trees, and natural-deduction proofs in order to determine the logical properties of statements and arguments

F. SPECIAL INFORMATION:

This course may require use of the Internet, the submission of electronically prepared documents, and the use of a course management software program. Students who have a disability and need accommodations should contact the instructor or the Student Success Center at the beginning of the semester. This information will be made available in alternative format, such as Braille, large print, or current media, upon request.

G. COURSE CODING INFORMATION:

Course Code A/Class Maximum 48; Letter Grade

Revision date: 1/14/10; 9/1/16

AASC Approval date: 9/20/16

*Riverland Community College Disciplines	MnTC Goal Number
Communication (CM)	1
Natural Sciences (NS)	3
Mathematics/Logical Reasoning (MA)	4

History and the Social & Behavioral Sciences (SS)	5
Humanities and Fine Arts (HU)	6
**Riverland Community College Core Themes	MnTC Goal Number
Critical Thinking (CT)	2
Human Diversity (HD)	7
Global Perspective (GP)	8
Ethical and Civic Responsibility (EC)	9
People and the Environment (PE)	10

*These five MnTC Goals have been identified as Riverland Community College Disciplines.

**These five MnTC Goals have been identified as Riverland Community College Core Themes.

NOTE: The Minnesota Transfer Curriculum “10 Goal Areas of Emphasis” are reflected in the five required discipline areas and five core themes noted in the Riverland Community College program of study guide and/or college catalog.