湖北工業大學
HUBEI UNIVERSITY OF TECHNOLOGY

Course Title	Introduction to Symbolic Logic
Course Code	PHIL 2011
Semester	Summer 2026
Course Length	4 Weeks, 60 Contact Hours
Credits	4
Instructor	TBA
Office	TBA
Email	TBA
Prerequisite	N/A

Course Description:

This course explores the fundamental principles of deductive reasoning by employing symbolic notation to represent and analyze the structure of arguments. Students will master the translation of ordinary-language statements into formal systems, apply systematic methods to test argument validity, and practice constructing rigorous proofs. Coverage encompasses both propositional logic (focusing on connectives and compound statements) and predicate logic (incorporating quantifiers and relational expressions), fostering skills in precise thinking that transfer across disciplines such as philosophy, mathematics, computer science, law, and the sciences.

Course Goals:

Students who successfully complete this course will demonstrate competency in the following general education core goals:

- **Critical thinking skills** – Students will engage in creative and/or innovative thinking, and/or inquiry, analysis, evaluation, synthesis of information, organizing concepts, and constructing solutions.
- **Communication skills** – Students will demonstrate effective written, oral, and visual communication.
- **Teamwork** – Students will demonstrate the ability to work effectively with others to support a shared purpose or goal and consider different points of view.
- **Social responsibility** – Students will demonstrate intercultural competency and civic knowledge by engaging effectively in local, regional, national, and global communities.

Student Learning Outcomes:

Upon completion of this course, students will be able to:

- Translate English sentences and arguments into symbolic notation for propositional and predicate logic;
- Evaluate argument validity using truth tables, semantic methods, and natural deduction systems;
- Construct formal derivations, including advanced strategies such as conditional proof and reductio ad absurdum;
- Identify and avoid common formal fallacies while distinguishing deductive from other forms of reasoning;
- Apply logical tools to real-world arguments with clarity and confidence.

Textbooks/Supplies/Materials Requirements:

Primary:
A Concise Introduction to Logic (13th Edition) by Patrick J. Hurley and Lori Watson. Cengage Learning.
Supplementary:
The Logic Book (6th Edition) by Merrie Bergmann, James Moor, and Jack Nelson. McGraw-Hill Education.
Language, Proof and Logic (2nd Edition) by David Barker-Plummer, Jon Barwise, John Etchemendy.

Course Requirements:

Homework Assignments:
These consist of regular problem sets that reinforce key skills such as symbolization, truth-table construction, and derivation building. Assignments are distributed at intervals and emphasize hands-on application of concepts to English-language arguments.

Periodic Quizzes: Short, in-class quizzes (typically 10-15 minutes) test ongoing comprehension of recent topics, such as translation rules or basic inference patterns. They promote consistent review and identify areas needing clarification early in the learning process.

Midterm Examination: A single in-class midterm evaluates integrated understanding of propositional logic and introductory predicate logic topics up to that point. It includes a mix of translation exercises, validity tests, and short derivations to assess both procedural fluency and conceptual grasp.

Final Examination: A comprehensive, cumulative final exam covers the full range of material, with emphasis on predicate logic derivations and overall argument analysis. It synthesizes all course skills through varied problem types.

Assessments: Activity	**Percent Contribution**
Homework Assignments	30%
Periodic Quizzes	15%
Midterm Examination	20%
Final Examination	35%

Grading:

Final grades will be based on the sum of all possible course points as noted above.

Grade	Percentage of available points
A	94-100
A-	90-93
B+	87-89
B	84-86
B-	80-83
C+	77-79
C	74-76
C-	70-73
D	64-69
D-	60-63
F	0-59

Course Schedule:
The schedule of activities is subject to change at the reasonable discretion of the instructor. Minor changes will be announced in class, major ones provided in writing.

PHIL 2011 Schedule

Lecture	Topic	Readings
L1	Introduction to arguments, premises, and conclusions	Ch. 1.1-1.2
L2	Recognizing arguments; deduction vs. induction	Ch. 1.3-1.4
L3	Propositional logic: symbols and translation	Ch. 6.1
L4	Truth functions and compound statements	Ch. 6.2
L5	Truth tables for propositions	Ch. 6.3
L6	Truth tables for arguments and indirect truth tables	Ch. 6.4-6.5
L7	Natural deduction: rules of implication	Ch. 7.1-7.2
L8	Rules of replacement	Ch. 7.3-7.4
L9	Conditional proof and indirect proof strategies	Ch. 7.5-7.6
L10	Propositional logic review and common fallacies	Ch. 6.6 + Ch. 3 selected sections
L11	Limitations of propositional logic; introduction to predicates	Ch. 8.1 (preview) + review Ch. 6-7
L12	Predicate logic: quantifiers and basic symbolization	Ch. 8.1-8.2
L13	**Midterm Examination**	
L14	Quantifier negation and basic inference rules	Ch. 8.3
L15	Conditional and indirect proof in predicate logic	Ch. 8.4
L16	Proving invalidity in predicate logic	Ch. 8.5
L17	Relational predicates and overlapping quantifiers	Ch. 8.6
L18	Identity statements and definite descriptions	Ch. 8.7
L19	Advanced derivation strategies in predicate logic	Ch. 8 (review)
L20	Conditional proof and reductio in full predicate contexts	Ch. 8.4 + 8.7
L21	Applications: everyday arguments and non-deductive reasoning	Review Ch. 6-8 + selected Ch. 3
L22	Informal fallacies in ordinary language	Ch. 3 (selected sections)
L23	Comprehensive review and problem-solving practice	All chapters
L24	Final review session and Q&A	All chapters
L25	Exam preparation and exercises	All chapters

Final Examination

Accommodation Statement

Academic accommodations may be made for any student who notifies the instructor of the need for an accommodation. It is imperative that you take the initiative to bring such needs to the instructor's attention, as he/she is not legally permitted to inquire. Students who may require assistance in emergency evacuations should contact the instructor as to the most appropriate procedures to follow.

Academic Integrity Statement

Each student is expected to maintain the highest standards of honesty and integrity in academic and professional matters. The University reserves the right to take disciplinary action, up to and including dismissal, against any student who is found guilty of academic dishonesty or otherwise fails to meet the standards. Any student judged to have engaged in academic dishonesty in coursework may receive a reduced or failing grade for the work in question and/or for the course.

Academic dishonesty includes, but is not limited to, dishonesty in quizzes, tests, or assignments; claiming credit for work not done or done by others; hindering the academic work of other students; misrepresenting academic or professional qualifications within or without the University; and nondisclosure or misrepresentation in filling out applications or other University records.

Other Items:

Attendance and Expectations

All students are required to attend every class, except in cases of illness, serious family concerns, or other major problems. We expect that students will arrive on time, be prepared to listen and participate as appropriate, and stay for the duration of a meeting rather than drift in or out casually. In short, we anticipate that students will show professors and fellow students maximum consideration by minimizing the disturbances that cause interruptions in the learning process. This means that punctuality is a must, that cellular phones be turned off, and that courtesy is the guiding principle in all exchanges among students and faculty. You will be responsible for the materials and ideas presented in the lecture.

Assignment Due Dates

All written assignments must be turned in at the time specified. Late assignments will not be accepted unless prior information has been obtained from the instructor. If you believe you have extenuating circumstances, please contact the instructor as soon as possible.

Make-Up Work

The instructor will not provide students with class information or make-up assignments/quizzes/exams missed due to an unexcused absence. Absences will be excused and assignments/quizzes/exams may be made up only with written documentation of an authorized absence. Every effort should be made to avoid

scheduling appointments during class. An excused student is responsible for requesting any missed information from the instructor and setting up any necessary appointments outside of class.

Access, Special Needs and Disabilities
Please notify the instructor at the start of the semester if you have any documented disabilities, a medical issue, or any special circumstances that require attention, and the school will be happy to assist.