Birla Institute of Technology & Science, Pilani
Hyderabad Campus

FIRST SEMESTER 2020-2021

Course Handout Part II

Date: 17-08-2020

In addition to part-I (General Handout for all courses appended to the time table) this portion gives further specific details regarding the course.

Course No. : **HSS F236 / PHIL C221**
Course Title : ***Symbolic Logic***
Instructor-in-Charge : Pranesh Bhargava

Scope and Objective of the Course:

This course aims to introduce students to the field of Symbolic Logic. The projected outcome of the course is for the learner to have a better understanding of the nature of symbolic logic, its various technical aspects and its application in language.

Textbooks:

Copi, Irving M., *Symbolic Logic*, 5th Edition, Pearson Education, 1979 (Indian Reprint, 2006)

Reference books

R1. Carney, J.D, *Introduction to Symbolic Logic*, Englewood Cliffs, N.J., 1970
R2. Copi, Irving M, *Introduction to Logic*, Prentice Hall of India, N.D., 11th Edition, 2002

Course Plan:

Lecture No.	Learning objectives	Topics to be covered	Chapter in the Text Book
1	Develop an overview the nature of logical reasoning	Introduction to Logic	R2, Ch. 1
2	Familiarize the major vocabulary of the subject	Key Concepts	R2, Ch. 1
3	Determine how the premises support the conclusion.	Representing the Structure of Arguments	R2, Ch.1
4	Analyze the relation between truth, validity and soundness to understand the nature	Truth, Validity and Soundness	Text Book, Ch. 1

	of arguments clearly.		
5	Understand the basis of division between categorical propositions in traditional logic.	Categorical Propositions: Quantity, Quality and Distribution	R2, Ch.5
6	Recognize the different ways in which the propositions are related to each other and the different opposition relations	Traditional Square of Opposition: Relations of Opposition	R2, Ch.5
7-8	Identify the nature of categorical syllogism and the relevance of major, minor and middle terms in determining validity and to see the possible fallacies.	Categorical Syllogisms: Major, Minor and Middle terms and Validity of Syllogisms, Rules and Fallacies.	R2, Ch.6
9-10	Understand how to represent and check the validity of arguments by means of Venn diagrams	Venn Diagrams	R2, Ch. 6
11	Analyze the value of symbolic logic and understand its different concerns.	Symbolic Logic: Introduction	Text Book, Ch. 1
12	Recognize the value of sentential connectives in forming compound statements out of simple statements.	Sentential Connectives	Text Book, Ch.2
13	Identify how to symbolically represent natural language so that the logical features could be easily located.	Symbolizing Natural Language	Text Book, Ch.2
14	Examine the nature of the arguments, which are composed of compound statements, as their	Arguments Containing Compound Statements	Text Book, Ch.2

	validity depends heavily on the different ways the compound statements are related to each other.		
15	Identify the important role of truth functional connectives like conjunction, disjunction, implication etc. in determining the truth-value of propositions.	Propositional Calculus: Role of truth-functional connectives	Text Book, Ch.2
16	Construct truth tables of different truth functional connectives.	Truth-tables	Text Book, Ch.2
17-18	Examine the validity of arguments mechanically using truth tables.	Testing Validity and Invalidity by Truth tables	Text Book, Ch.2
19	Identify the formal features of arguments so that checking validity will be easier.	Argument Forms	Text Book, Ch.2
20	Appraise the formal nature of different type of statement and to classify them into three groups: tautologies, contradictories and contingent.	Statement Forms	Text Book, Ch.2
21	Assess whether a statement is a tautology or contradictory or contingent by means of truth tables.	Testing the Status of Statement Forms by Truth-tables	Text Book, Ch.2
22-23	Review validity of arguments with the help of a set of elementary argument forms that can be	Formal Proof of Validity: Rules of Inference	Text Book, Ch. 3

	applied to check validity mechanically.		
24-26	Apply a set of logical equivalences in the process of arriving at the validity of arguments.	Rules of Replacement	Text Book, Ch. 3
27	Prove certain arguments invalid without using truth tables and not employing the formal proof.	Proving Invalidity	Text Book, Ch. 3
28	Understand the use of conditional proof to prove validity of arguments	Conditional Proof	Text Book, Ch. 3
29	Employ the *reductio ad absurdum* method to assess validity of arguments	Indirect Proof	Text Book, Ch. 3
30-31	Learn a method, which employs insights from truth table technique and *reductio ad absurdum* to check validity and the status of statements.	Shorter Truth table Technique	Text Book, Ch. 3
32-33	Demonstrate how to symbolize statements that involve existential or universal quantifiers.	Quantification theory Translation with Quantifiers	Text Book, Ch. 4
34	Recognize the nature and function of the quantifiers	Universal Quantifier and Existential Quantifier	Text Book, Ch. 4
35	Construct a modern square of opposition using quantifiers	Modern Square of Opposition	Text Book, Ch. 4
36	Assess the validity of arguments that involves propositions with quantifiers.	Quantification Rules	Text Book, Ch. 4
37	Examine the validity of arguments by	Proving Validity	Text Book, Ch. 4

	using the quantification rules.		
38	Demonstrate the invalidity of certain arguments by assigning truth-values.	Proving Invalidity	Text Book, Ch. 4
39	Understand how to symbolize the statements which involve relations.	Symbolizing Relations	Text Book, Ch.5
40-42	Inspect the attributes of relational statements.	Attributes of Binary Relations	Text Book, Ch.5

Evaluation Scheme:

Component	Duration	Weighting (%)	Date & Time	Nature of Component
Test-1	30	15	September 10 – September 20 (During scheduled class hour)	Open book
Test-2	30	15	October 9 –October 20 (During scheduled class hour)	Open Book
Assignment-Test	TBA on CMS	25	By 3rd week of October (During scheduled class hour)	Open Book
Test-3	30	15	November 10 – November 20 (During scheduled class hour)	Open Book
Comprehensive	120	30	According to the time-table	Open Book

Chamber Consultation Hour: To be announced on CMS

Notices: Available on CMS

Make-up Policy: Only be given for genuine cases, as per the discretion of the instructor.

Academic Honesty and Integrity Policy: Academic honesty and integrity are to be maintained by all the students throughout the semester and no type of academic dishonesty is acceptable.

Dr. Pranesh Bhargava

INSTRUCTOR-IN-CHARGE