

# Mathematical Logic - Video course

## COURSE DETAIL

Unit No	Topics	Lectures
1	<b>Propositional Logic</b>	7
	Syntax, Unique parsing, Semantics, Equivalences, Consequences, Calculations, Informal proofs.	
2	<b>Normal Forms and Resolution</b>	7
	Clauses, CNF and DNF representations, Adequacy of calculations, SAT, Resolution refutation, Adequacy of resolution.	
3	<b>Proof Systems</b>	8
	Axiomatic system PC, Adequacy of PC, Analytic tableau PT, Adequacy of PT, Compactness of PL.	
4	<b>First Order Logic</b>	8
	Syntax of FL, Scope and binding, Substitutions, Semantics of FL, Quantifier laws, Equivalences, Consequences.	
5	<b>Normal Forms in FL</b>	8
	Calculations, Informal proofs, Prenex forms, Skolem forms, Herbrand's theorem, Skolem-Lowenheim theorem, Resolution in FL	
6	<b>Proof Systems for FL</b>	6
	Axiomatic system FC, Analytic tableau FT, Adequacy of FC and FT, Compactness in FL.	
7	<b>Axiomatic Theories</b>	2
	Undecidability of FL, Godel's incompleteness theorems.	



NP-TEL

# NPTEL

<http://nptel.iitm.ac.in>

## Mathematics

### Additional Reading:

1. J R Shoenfield, Mathematical Logic, Addison Wesley, Reading, Massachusetts, 1967.
2. R. Smullyan, First order logic, Springer Verlag, New York 1968.

### Hyperlinks:

1. The [resource list](#) at [Texas A & M University](#).
2. Dr. Martindale's [Reference Desk](#) is an extremely comprehensive (probably complete) list of online software (including logic-related programs).
3. "[What are the best philosophy resources?](#)" at [encyclopaedia.com](#).
4. Spanish [Pagina sobre filosofia](#) by Francisco Conde.
5. [Episteme Links](#), another compilation of philosophy-related resources.
6. The [Logic & Set Theory](#) chapter of the [Math Archives](#) at the University of Tennessee, Knoxville.
7. A list of very thoroughly selected [logical resources](#) (University of Dusseldorf).
8. [Martin Flashman's Logic and Set Theory Web Surfing Page](#).
9. [Mathematical Logic around the world](#).
10. [Logical resources](#) from Finland.

<b>Total</b>	<b>46</b>
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11. Mariusz Grygianiec's und Piotr Lajeczko's [Philosophia Analytica in Polonia](#), a collection of information on Polish logic and analytical philosophy.

12. [Peter Suber](#) 's [Logic topics](#).

**Coordinators:**

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**References:**

1. Logics for computer science, A singh, PHI, 2004.
2. Fundamentals of Logic, A singh, and C.Goswami, ICPR New dELHI, 1998.