

# NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mathematics - NOC:An Invitation to Topology

Subject Co-ordinator - Prof. Indrava Roy

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

Lecture 1 - Introduction to Topology

Lecture 2 - Basic Set theory

Lecture 3 - Mathematical Logic - Part 1

Lecture 4 - Mathematical Logic - Part 2

Lecture 5 - Functions

Lecture 6 - Finite Sets - Part 1

Lecture 7 - Finite Sets - Part 2

Lecture 8 - Infinite Sets

Lecture 9 - Infinite Sets and Axiom of Choice

Lecture 10 - Definition of aTopology

Lecture 11 - Examples of different topologies

Lecture 12 - Basis for a topology

Lecture 13 - Various topologies on the real line

Lecture 14 - Comparison of topologies - Part 1: Finer and coarser topologies

Lecture 15 - Comparison of topologies - Part 2: Comparing the various topologies on  $\mathbb{R}$

Lecture 16 - Basis and Sub-basis for a topology

Lecture 17 - Various topologies: the subspace topology

Lecture 18 - The Product topology

Lecture 19 - Topologies on arbitrary Cartesian products

Lecture 20 - Metric topology - Part 1

Lecture 21 - Metric topology - Part 2

Lecture 22 - Metric topology - Part 3

Lecture 23 - Closed Sets

Lecture 24 - Closure and Limit points

Lecture 25 - Continuous functions

Lecture 26 - Construction of continuous functions

Lecture 27 - Continuous functions on metric spaces - Part 1

Lecture 28 - Continuous functions on metric spaces - Part 2

Lecture 29 - Connectedness

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- Lecture 30 - Some conditions for Connectedness
- Lecture 31 - Connectedness of the Real Line
- Lecture 32 - Connectedness of a Linear Continuum
- Lecture 33 - The Intermediate Value Theorem
- Lecture 34 - Path-connectedness
- Lecture 35 - Connectedness does not imply Path-connectedness - Part 1
- Lecture 36 - Connectedness does not imply Path-connectedness - Part 2
- Lecture 37 - Connected and Path-connected Components
- Lecture 38 - Local connectedness and Local Path-connectedness
- Lecture 39 - Compactness
- Lecture 40 - Properties of compact spaces
- Lecture 41 - The Heine-Borel Theorem
- Lecture 42 - Tychonoff's theorem
- Lecture 43 - Proof of Tychonoff's theorem - Part 1
- Lecture 44 - Proof of Tychonoff's theorem - Part 2
- Lecture 45 - Compactness in metric spaces
- Lecture 46 - Lebesgue Number Lemma and the Uniform Continuity theorem
- Lecture 47 - Different Kinds of Compactness
- Lecture 48 - Equivalence of various compactness properties for Metric Spaces
- Lecture 49 - Compactness and Sequential Compactness in arbitrary topological spaces
- Lecture 50 - Baire Spaces
- Lecture 51 - Properties and Examples of Baire Spaces
- Lecture 52 - The Baire Category Theorem
- Lecture 53 - Complete Metric Spaces and the Baire Category theorem - Part 1
- Lecture 54 - Complete Metric Spaces and the Baire Category theorem - Part 2
- Lecture 55 - Application of the Baire Category theorem
- Lecture 56 - Regular and Normal spaces
- Lecture 57 - Properties and examples of regular and normal spaces
- Lecture 58 - Urysohn's Lemma
- Lecture 59 - Proof of Urysohn's Lemma
- Lecture 60 - Tietze Extension theorem - Part 1
- Lecture 61 - Tietze Extension theorem - Part 2
- Lecture 62 - Compactness and Completeness in Metric spaces
- Lecture 63 - The space of continuous functions - Part 1
- Lecture 64 - The space of continuous functions - Part 2
- Lecture 65 - Equicontinuity
- Lecture 66 - Total boundedness and Equicontinuity - Part 1
- Lecture 67 - Total boundedness and Equicontinuity - Part 2
- Lecture 68 - Topology of compact convergence - Part 1

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- Lecture 69 - Topology of compact convergence - Part 2
- Lecture 70 - Equicontinuity revisited - Part 1
- Lecture 71 - Equicontinuity revisited - Part 2
- Lecture 72 - Locally compact Hausdorff spaces
- Lecture 73 - The Arzelà - Ascoli theorem