

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

NPTEL Video Course - Electronics and Communication Engineering - NOC:Introduction to Microwave and Optical Me

Subject Co-ordinator - Prof. Debabrata Sikdar

Co-ordinating Institute - IIT Guwahati

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

- Lecture 1 - Introduction to Microwave and Optical Metamaterials - I
- Lecture 2 - Introduction to Microwave and Optical Metamaterials - II
- Lecture 3 - Applications of Optical Metamaterials and Classifications of Metamaterials
- Lecture 4 - Classifications of Metamaterials - II
- Lecture 5 - Overview of Metamaterials Technology
- Lecture 6 - Basic Electromagnetic Theory - I
- Lecture 7 - Basic Electromagnetic Theory - II
- Lecture 8 - Electromagnetic Properties of Materials
- Lecture 9 - Electromagnetic Waves in Materials
- Lecture 10 - Electromagnetic Waves in Periodic Medium
- Lecture 11 - Polarization of Electromagnetic Waves
- Lecture 12 - Fresnel Equations
- Lecture 13 - Absorption and Dispersion of Electromagnetic Waves
- Lecture 14 - Scattering of Electromagnetic Waves
- Lecture 15 - Concept Behind Metamaterials
- Lecture 16 - Opical Properties of Metals - I
- Lecture 17 - Opical Properties of Metal and Dielectrics
- Lecture 18 - Opical Properties of Dielectrics
- Lecture 19 - Mixing Rules and Effective Medium Theories
- Lecture 20 - Effective Medium Theory - II
- Lecture 21 - Overview of Electric Metamaterials
- Lecture 22 - Periodic Array of Metallic Wires - I
- Lecture 23 - Periodic Array of Metallic Wires - II
- Lecture 24 - Inhomogeneous and Chiral Metamaterials
- Lecture 25 - Types of Engineered Metamaterials and Applications
- Lecture 26 - Split Ring Resonators
- Lecture 27 - Optical Magnetic Elements
- Lecture 28 - Analytical model of magnetic nanostrips
- Lecture 29 - High-Permittivity Route to Artificial Magnetism

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- Lecture 30 - Modelling of Microwave devices using metamaterials
- Lecture 31 - 2D Model of Microwave Antenna with One Layer Metamaterial
- Lecture 32 - Miniaturized Design of Microwave Antenna
- Lecture 33 - Far-field Focusing for Microwave Antennas
- Lecture 34 - Metamaterial-Inspired Antennas - I
- Lecture 35 - Metamaterial-Inspired Antennas - II
- Lecture 36 - Brief Overview of Negative Index Metamaterials
- Lecture 37 - Negative Index Metamaterials - I
- Lecture 38 - Negative Index Metamaterials - II
- Lecture 39 - Super Resolution with Meta-Lenses
- Lecture 40 - Applications of Composite Near-Field Superlens
- Lecture 41 - Fundamentals of Hyperbolic Metamaterials
- Lecture 42 - Hyperbolic Metamaterials for Super-resolution Hyperlens Imaging
- Lecture 43 - Hyperbolic metamaterials for nanoscale optical cavities
- Lecture 44 - Metamaterials Based Nanoscale Optical Cavities and Active Hyperbolic Metamaterials
- Lecture 45 - Applications of Active Hyperbolic Metamaterials
- Lecture 46 - Active Hyperbolic Metamaterials for Various Spectral Band
- Lecture 47 - Principles of Transformational Electromagnetics
- Lecture 48 - Examples and Applications of Transformational Electromagnetics
- Lecture 49 - Invisibility Cloaks
- Lecture 50 - Carpet Cloaking
- Lecture 51 - Realizing Electromagnetic Cloaking using Metamaterials
- Lecture 52 - Transformation Electromagnetics for Antenna Applications and Stealth Technology
- Lecture 53 - Tunable metamaterials and Magnetically tunable metamaterials
- Lecture 54 - Electrically Tunable Metamaterials
- Lecture 55 - Thermally Tunable Metamaterials
- Lecture 56 - Tunable Metamaterials-based Sensors
- Lecture 57 - Metamaterial Fabrication Techniques
- Lecture 58 - Microwave Metamaterial Patterning Methods
- Lecture 59 - Optical Metamaterial Patterning Methods
- Lecture 60 - Metamaterial Fabrication Technique: Pattern Transfer
- Lecture 61 - Characterization Methods of Metamaterials