

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

NPTEL Video Course - Civil Engineering - NOC:An Introduction to Climate Dynamics, Variability and Monitoring

Subject Co-ordinator - Prof. Sayak Banerjee

Co-ordinating Institute - IIT - Hyderabad

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

- Lecture 1 - Introduction to Climate Dynamics, Variability and Monitoring - Part 1
- Lecture 2 - Introduction to Climate Dynamics, Variability and Monitoring - Part 2
- Lecture 3 - Climatic Variables of the Atmosphere
- Lecture 4 - Atmospheric Layers; Troposphere; Temperature Lapse Rate
- Lecture 5 - Atmospheric Structure and Composition
- Lecture 6 - Atmospheric Gas Concentration and introduction to Atmospheric Pressure
- Lecture 7 - Atmospheric Pressure and Mass
- Lecture 8 - How to Measure Vertical Variation of Pressure
- Lecture 9 - Fundamentals of Atmospheric Humidity and Weather Variables
- Lecture 10 - Advanced Atmospheric Humidity Concepts Contours and Key Relationships
- Lecture 11 - Virtual Temperature and Atmospheric Stability Concepts
- Lecture 12 - Understanding Atmospheric Stability Adiabatic Relations and Lapse Rate
- Lecture 13 - Potential Temperature, Adiabatic Lapse Rate of Moist Air, Three Possible Stability Relationships
- Lecture 14 - Derivation of Potential Temperature, Deriving the Expression for Saturated Adiabatic Lapse Rate
- Lecture 15 - Temperature Variation With Changes in Vertical Pressure
- Lecture 16 - Temperature Gradient of Dry and Saturated Air Parcel, Earth Sun Relationship
- Lecture 17 - Fundamentals of Earth'S Climate System Latitude, Longitude, and Temperature Dynamics
- Lecture 18 - Understanding Earth'S Seasons Axial Tilt, Solstice, and Equinox Dynamics
- Lecture 19 - Mean Emission Temperature of Earth and the Greenhouse Effect - Part 1
- Lecture 20 - Mean Emission Temperature of Earth and the Greenhouse Effect - Part 2
- Lecture 21 - Mean Emission Temperature of Earth and the Greenhouse Effect - Part 3
- Lecture 22 - Net Radiative Flux Imbalance Annual Averaged and Seasonal
- Lecture 23 - Derivation of Beam Spreading Effect, Derivation of the Greenhouse Effect
- Lecture 24 - Derivation of Analysing the Atmosphere of Venus, Radiation Fluxes
- Lecture 25 - Principles of Electromagnetic Radiation Spectral Intensity, Irradiance, and Material Interaction
- Lecture 26 - Blackbody Radiation Relations
- Lecture 27 - Atmospheric Absorption and Radiative Transfer
- Lecture 28 - Radiative Transfer in the Atmosphere Key Concepts
- Lecture 29 - Infrared Radiative Transfer in the Earth'S Atmosphere

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- Lecture 30 - Radiative Flux and Optical Depth
- Lecture 31 - Introduction to Atmospheric Heating and Heat Balance
- Lecture 32 - Advanced Atmospheric Heating and Heat Balance
- Lecture 33 - Temperature Distribution for a Continuously Stratified Atmosphere in Radiative Equilibrium - Part 1
- Lecture 34 - Temperature Distribution for a Continuously Stratified Atmosphere in Radiative Equilibrium - Part 2
- Lecture 35 - Temperature Distribution and Greenhouse Effect in a Continuously Stratified Atmosphere
- Lecture 36 - Atmospheric Circulation Systems - Basic Concepts
- Lecture 37 - Atmospheric Circulation Systems - Coriolis Forces
- Lecture 38 - Atmospheric Circulation Systems - Pressure Forces
- Lecture 39 - Atmospheric Circulation Systems - Frictional Forces and Surface Level Winds
- Lecture 40 - Atmospheric Circulation Systems - High Level Winds
- Lecture 41 - Seasonal Shifts - Advanced Concepts
- Lecture 42 - The Ocean and the Climate
- Lecture 43 - Ocean Salinity and Mixing Layer
- Lecture 44 - Importance of Mixing Layer and Wind Driven Surface Current
- Lecture 45 - Ocean Circulation and Deep Oceanic thermohaline Circulation
- Lecture 46 - Coupled Ocean Atmosphere Variability
- Lecture 47 - Global Temperature Model, Radiative Forcing and Zero Dimensional Energy Balance Model
- Lecture 48 - Zero Dimensional Energy Balance Model (Continued...)
- Lecture 49 - Energy Balance Model and Temperature Response to Radiative Forcing
- Lecture 50 - Temperature Response to Radiative Forcing (Continued...)
- Lecture 51 - Planck Feedback or Blackbody Radiative Feedback, Simple Radiative Balance Model
- Lecture 52 - Indirect Feedback: Water Vapour Feedback and Spectral Outgoing Longwave Radiation
- Lecture 53 - Absorption of Outgoing Longwave Radiation By Atmospheric CO₂
- Lecture 54 - Introduction to Principles of Measurement and Instrumentation - Part 1
- Lecture 55 - Introduction to Principles of Measurement and Instrumentation - Part 2
- Lecture 56 - Introduction to Principles of Measurement and Instrumentation - Part 3
- Lecture 57 - Automatic Weather Stations, Temperature Measurements and Humidity Measurements
- Lecture 58 - Humidity Measurements and Pressure Measurements
- Lecture 59 - Wind Measurements Techniques
- Lecture 60 - Radiation and Temperature Measurements - Part 1
- Lecture 61 - Radiation and Temperature Measurements - Part 2
- Lecture 62 - Radiation and Precipitation Measurements
- Lecture 63 - Upper Air Measurements
- Lecture 64 - Remote Sensing: Climatological Applications
- Lecture 65 - Types of Satellite Orbit and its Remote Sensing Applications, VNIR Imaging through Electro Optics
- Lecture 66 - Spatial and Spectral Resolution of Satellite Imagery and Application of VNIR Imaging in Climatology
- Lecture 67 - Application of VNIR Imaging in Climatology and Thermal Infrared Imaging Systems
- Lecture 68 - Cloud Detection, Nadir Viewing, Limb Sounding, Solar Occultation

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Lecture 69 - Ground Based Atmospheric Remote Sounding