

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

NPTEL Video Course - Biotechnology - Biomathematics

Subject Co-ordinator - Dr. Ranjith Padinhateeri

Co-ordinating Institute - IIT - Bombay

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

Lecture 1 - Introduction  
Lecture 2 - Graphs and functions - I  
Lecture 3 - Graphs and functions - II  
Lecture 4 - Functions and derivatives  
Lecture 5 - Calculation of derivatives  
Lecture 6 - Differentiation and its application in Biology - I  
Lecture 7 - Differentiation and its application in Biology - II  
Lecture 8 - Differentiation and its application in Biology - III  
Lecture 9 - Differentiation and its application in Biology - IV  
Lecture 10 - Integration - I  
Lecture 11 - Integration - II  
Lecture 12 - Differential equations - I  
Lecture 13 - Differential equations - II  
Lecture 14 - Vectors - I  
Lecture 15 - Vectors - II  
Lecture 16 - Vectors - III  
Lecture 17 - Nernst equation  
Lecture 18 - Diffusion - I  
Lecture 19 - Diffusion - II  
Lecture 20 - Diffusion - III  
Lecture 21 - Statistics  
Lecture 22 - Statistics  
Lecture 23 - Understanding Normal distribution  
Lecture 24 - Fitting a function to experimental data  
Lecture 25 - Size of a flexible protein  
Lecture 26 - Uniform and Poisson distributions; Knudson's analysis  
Lecture 27 - Fourier Series - I  
Lecture 28 - Fourier Series - II  
Lecture 29 - Fourier transform

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- Lecture 30 - Master equation
- Lecture 31 - Evolution
- Lecture 32 - Tutorial - I
- Lecture 33 - Tutorial - II
- Lecture 34 - Temperature, Energy and Entropy
- Lecture 35 - Partition function, Free energy
- Lecture 36 - Bending fluctuations of DNA and spring-like proteins
- Lecture 37 - Force-extension and looping of DNA
- Lecture 38 - Thermodynamics of protein organization along DNA
- Lecture 39 - Learning mathematics with the help of a computer

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

NPTEL Video Course - Biotechnology - Proteomics and Genomics

Subject Co-ordinator - Prof. Sanjeeva Srivastava

Co-ordinating Institute - IIT - Bombay

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

Lecture 1  
Lecture 2  
Lecture 3  
Lecture 4  
Lecture 5  
Lecture 6  
Lecture 7  
Lecture 8  
Lecture 9  
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Lecture 28  
Lecture 29

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Lecture 30  
Lecture 31  
Lecture 32  
Lecture 33  
Lecture 34  
Lecture 35  
Lecture 36  
Lecture 37  
Lecture 38  
Lecture 39  
Lecture 40

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

NPTEL Video Course - Biotechnology - NOC:Proteins and Gel-Based Proteomics

Subject Co-ordinator - Prof. Sanjeeva Srivastava

Co-ordinating Institute - IIT - Bombay

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

- Lecture 0 - Proteins and Gel-Based Proteomics; Course Introduction
- Lecture 1 - Introduction to amino acids
- Lecture 2 - Introduction to proteins
- Lecture 3 - Protein folding & misfolding
- Lecture 4 - Protein purification techniques
- Lecture 5 - Introduction to proteomics
- Lecture 6 - Systems biology and proteomics
- Lecture 7 - Sample preparation and pre-analytical factors
- Lecture 8 - Sample preparation
- Lecture 9 - Sample preparation
- Lecture 10 - One-dimensional electrophoresis
- Lecture 11 - 2-DE
- Lecture 12 - 2-DE
- Lecture 13 - 2-DE
- Lecture 14 - 2-DE
- Lecture 15 - 2-DE
- Lecture 16 - 2D-DIGE
- Lecture 17 - 2D-DIGE
- Lecture 18 - 2D-DIGE
- Lecture 19 - Protein identification using MALDI-TOF/TOF
- Lecture 20 - Proteomics experiment data analysis & challenges

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

NPTEL Video Course - Biotechnology - NOC:Mass spectrometry based proteomics

Subject Co-ordinator - Prof. Sanjeeva Srivastava

Co-ordinating Institute - IIT - Bombay

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

- Lecture 0 - Introductory lecture
- Lecture 1 - Introduction to proteomics
- Lecture 2 - Proteomics and sample preparation
- Lecture 3 - Bacterial protein extraction
- Lecture 4 - In-gel digestion
- Lecture 5 - Fundamentals of mass spectrometry
- Lecture 6 - Chromatography technologies
- Lecture 7 - Liquid chromatography
- Lecture 8 - Mass spectrometry
- Lecture 9 - Mass spectrometry
- Lecture 10 - MALDI sample preparation and analysis
- Lecture 11 - Introduction to quantitative proteomics
- Lecture 12 - Hybrid mass spectrometry configurations
- Lecture 13 - SILAC
- Lecture 14 - iTRAQ
- Lecture 15 - TMT
- Lecture 16 - Quantitative proteomics data analysis
- Lecture 17 - Proteomics and Systems biology I
- Lecture 18 - Proteomics & Systems biology II
- Lecture 19 - Proteomics applications
- Lecture 20 - Advances and challenges in proteomics

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

NPTEL Video Course - Biotechnology - NOC:Interactomics: Protein Arrays and Label-free Biosensors

Subject Co-ordinator - Prof. Sanjeeva Srivastava

Co-ordinating Institute - IIT - Bombay

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

- Lecture 1 - Introduction to Interactomics
- Lecture 2 - An overview of label-free technologies
- Lecture 3 - An overview of surface plasmon resonance (SPR)
- Lecture 4 - An overview of surface plasmon resonance imaging (SPRi)
- Lecture 5 - Basics of SPR
- Lecture 6 - Basics of SPR
- Lecture 7 - Protein immobilization for protein-protein interaction studies
- Lecture 8 - Protein-protein interaction study
- Lecture 9 - Protein-protein interaction study
- Lecture 10 - Protein-small molecule interaction study
- Lecture 11 - Protein-small molecule interaction study
- Lecture 12 - SPR
- Lecture 13 - SPR
- Lecture 14 - An overview of ellipsometry and interferometry techniques
- Lecture 15 - An introduction to BioLayer Interferometry (BLI) and its applications in protein research
- Lecture 16 - Kinetic analysis of protein-protein interaction using BLI
- Lecture 17 - Label-free quantification of proteins using BLI
- Lecture 18 - Diffraction-based biosensors - I
- Lecture 19 - Diffraction-based biosensors - II
- Lecture 20 - Nanotechniques in proteomics - I
- Lecture 21 - Nanotechniques in proteomics - II
- Lecture 22 - High throughput platforms of interactomics
- Lecture 23 - Conventional label based detection techniques for Protein microarrays
- Lecture 24 - Novel detection techniques for Protein microarrays
- Lecture 25 - Recombinational cloning and its application for Protein microarrays
- Lecture 26 - An introduction to Cell-free protein synthesis
- Lecture 27 - Cell-free synthesis based protein microarrays
- Lecture 28 - Cell-free synthesis based protein microarrays
- Lecture 29 - Digging deeper into NAPPA

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

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- Lecture 30 - Digging deeper into NAPPA
- Lecture 31 - Application of cell free expression protein microarrays in biomarker discovery
- Lecture 32 - Application of cell free expression protein microarrays in immunological studies
- Lecture 33 - Basics of microarray image scanning
- Lecture 34 - Software for Image scanning and data processing
- Lecture 35 - Microarray Data Analysis - Part I
- Lecture 36 - Microarray Data Analysis - Part II
- Lecture 37 - Application of protein microarray in biomarker discovery - I
- Lecture 38 - Application of protein microarray in biomarker discovery - II
- Lecture 39 - Systems biology and networks
- Lecture 40 - Challenges in proteomics



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

NPTEL Video Course - Biotechnology - NOC:Introduction to Proteomics

Subject Co-ordinator - Prof. Sanjeeva Srivastava

Co-ordinating Institute - IIT - Bombay

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

Lecture 1 - Introduction to amino acids

Lecture 2 - Introduction to proteins

Lecture 3 - Protein folding and misfolding

Lecture 4 - Introduction to proteomics

Lecture 5 - Lab session â Protein-protein interaction using label-free biosensors

Lecture 6 - Sample preparation and pre-analytical factors

Lecture 7 - Sample preparation

Lecture 8 - Sample preparation

Lecture 9 - One-dimensional electrophoresis

Lecture 10 - Introduction to 2-DE

Lecture 11 - 2-DE

Lecture 12 - 2-DE

Lecture 13 - 2-DE Applications

Lecture 14 - 2-DE Applications (Continued...) and Challenges

Lecture 15 - Lab session - Protein/peptide pre-fractionation using OFFGEL FRACTIONATOR and data analysis

Lecture 16 - 2D-DIGE

Lecture 17 - 2D-DIGE

Lecture 18 - 2D-DIGE

Lecture 19 - Systems biology and proteomics - I

Lecture 20 - Systems biology and proteomics - II

Lecture 21 - Fundamentals of mass spectrometry

Lecture 22 - Chromatography technologies

Lecture 23 - Liquid chromatography

Lecture 24 - Mass spectrometry

Lecture 25 - Mass spectrometry

Lecture 26 - MALDI sample preparation and analysis

Lecture 27 - Hybrid mass spectrometry configurations

Lecture 28 - Lab session - Demonstration of Q-TOF MS technology

Lecture 29 - In-gel and in-solution digestion

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

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- Lecture 30 - Lab session - Sample preparation
- Lecture 31 - Introduction to quantitative proteomics
- Lecture 32 - SILAC
- Lecture 33 - iTRAQ
- Lecture 34 - TMT
- Lecture 35 - Quantitative proteomics data analysis
- Lecture 36 - Proteomics applications
- Lecture 37 - Challenges in proteomics
- Lecture 38 - OMICS and translational research
- Lecture 39 - Lab session â Targeted proteomics using triple quadrupole mass spectrometry
- Lecture 40 - Lab session â Targeted proteomics

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

NPTEL Video Course - Biotechnology - NOC:Introduction to Biostatistics

Subject Co-ordinator - Prof. Shamik Sen

Co-ordinating Institute - IIT - Bombay

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

- Lecture 1 - Introduction to the course
- Lecture 2 - Data representation and plotting
- Lecture 3 - Arithmetic mean
- Lecture 4 - Geometric mean
- Lecture 5 - Measure of Variability, Standard deviation
- Lecture 6 - SME, Z-Score, Box plot
- Lecture 7 - Moments, Skewness
- Lecture 8 - Kurtosis, R programming
- Lecture 9 - R programming
- Lecture 10 - Correlation
- Lecture 11 - Correlation and Regression - Part-I
- Lecture 12 - Correlation and Regression - Part-II
- Lecture 13 - Interpolation and extrapolation
- Lecture 14 - Nonlinear data fitting
- Lecture 15 - Concept of Probability
- Lecture 16 - Counting principle, Permutations, and Combinations
- Lecture 17 - Conditional probability
- Lecture 18 - Conditional probability and Random variables
- Lecture 19 - Random variables, Probability mass function, and Probability density function
- Lecture 20 - Expectation, Variance and Covariance - Part-I
- Lecture 21 - Expectation, Variance and Covariance - Part-II
- Lecture 22 - Binomial random variables and Moment generating function
- Lecture 23 - Probability distribution
- Lecture 24 - Uniform distribution Part-II and Normal distribution Part-I
- Lecture 25 - Normal distribution Part-II and Exponential distribution
- Lecture 26 - Sampling distributions and Central limit theorem - Part-I
- Lecture 27 - Sampling distributions and Central limit theorem - Part-II
- Lecture 28 - Central limit theorem - Part-III and Sampling distributions of sample mean
- Lecture 29 - Central limit theorem - Part-IV and Confidence intervals

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

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- Lecture 30 - Confidence intervals Part- II
- Lecture 31 - Test of Hypothesis - 1
- Lecture 32 - Test of Hypothesis - 2 (1 tailed and 2 tailed Test of Hypothesis, p-value)
- Lecture 33 - Test of Hypothesis - 3 (1 tailed and 2 tailed Test of Hypothesis, p-value)
- Lecture 34 - Test of Hypothesis - 4 (Type -1 and Type -2 error)
- Lecture 35 - T-test
- Lecture 36 - 1 tailed and 2 tailed T-distribution, Chi-square test
- Lecture 37 - ANOVA - 1
- Lecture 38 - ANOVA - 2
- Lecture 39 - ANOVA - 3
- Lecture 40 - ANOVA for linear regression, Block Design

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

NPTEL Video Course - Biotechnology - NOC:Introduction to Mechanobiology

Subject Co-ordinator - Prof. Shamik Sen

Co-ordinating Institute - IIT - Bombay

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

- Lecture 1 - Need to Study Mechanobiology
- Lecture 2 - Cell as a Tent, Individual Components
- Lecture 3 - Cell-ECM Crosstalk
- Lecture 4 - ECM Proteins
- Lecture 5 - Measuring Properties of Collagen Networks
- Lecture 6 - Properties of Collagen Networks
- Lecture 7 - Rheology
- Lecture 8 - Rheology of Biopolymer Networks
- Lecture 9 - Atomic Force Microscopy (AFM)
- Lecture 10 - Design of Protein Constructs for AFM
- Lecture 11 - Protein Unfolding using AFM
- Lecture 12 - Protein Unfolding using AFM
- Lecture 13 - Focal Adhesions
- Lecture 14 - Focal Adhesion Organization
- Lecture 15 - Focal Adhesions
- Lecture 16 - Cytoskeleton
- Lecture 17 - Force-velocity Relationships of Actin Networks
- Lecture 18 - Mesenchymal Cell Migration
- Lecture 19 - Actin Dynamics during Mesenchymal Migration
- Lecture 20 - Actin Dynamics during Mesenchymal Migration
- Lecture 21 - Adhesion Independent Migration
- Lecture 22 - Adhesion Independent and Collective Cell Migration
- Lecture 23 - Collective Cell Migration
- Lecture 24 - Mechanobiology of Stem Cell Fate - I
- Lecture 25 - Mechanobiology of Stem Cell Fate - II
- Lecture 26 - Mechanobiology of Stem Cell Fate - III
- Lecture 27 - Mechanobiology of Diseases
- Lecture 28 - Mechanobiology of Diseases
- Lecture 29 - Mechanobiology of Diseases

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- Lecture 30 - Mechanobiology of Diseases
- Lecture 31 - Mechanobiology of Diseases
- Lecture 32 - Nuclear Mechanotransduction
- Lecture 33 - Nuclear Mechanotransduction
- Lecture 34 - Nuclear Mechanotransduction
- Lecture 35 - Mechanical Forces and DNA damage
- Lecture 36 - Techniques in Mechanobiology
- Lecture 37 - Techniques in Mechanobiology
- Lecture 38 - Techniques in Mechanobiology
- Lecture 39 - Techniques in Mechanobiology
- Lecture 40 - Techniques in Mechanobiology

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

NPTEL Video Course - Biotechnology - NOC: Introductory Mathematical Methods for Biologists

Subject Co-ordinator - Dr. Ranjith Padinhateeri

Co-ordinating Institute - IIT - Bombay

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

- Lecture 1 - Introduction
- Lecture 2 - Graphs and Functions
- Lecture 3 - Equations as Graphs
- Lecture 4 - Graphs
- Lecture 5 - Graphs
- Lecture 6 - Images as 2D/3D Functions
- Lecture 7 - Functions and its Derivatives
- Lecture 8 - Computing Derivatives of Curves
- Lecture 9 - Rules for Calculating Derivatives
- Lecture 10 - Understanding Derivatives
- Lecture 11 - Curvature and Second Derivative
- Lecture 12 - Plotting Curves
- Lecture 13 - Numerical Calculation of Derivatives
- Lecture 14 - Function, Derivatives and Series Expansion
- Lecture 15 - L'Hopital's Rule and Partial Derivatives
- Lecture 16 - Integration
- Lecture 17 - Integration
- Lecture 18 - Integration
- Lecture 19 - Integration
- Lecture 20 - Integration
- Lecture 21 - Exponential Growth and Decay
- Lecture 22 - Scalars and Vectors
- Lecture 23 - Vectors
- Lecture 24 - Cell Symmetry
- Lecture 25 - Gradient, Forces and Flows
- Lecture 26 - Gradient, Forces and Flows
- Lecture 27 - Understanding Diffusion
- Lecture 28 - Diffusion Constant and Einstein Relation 1905
- Lecture 29 - Diffusion Equation

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- Lecture 30 - Diffusion vs. Active Transport
- Lecture 31 - Nernst Equation
- Lecture 32 - Fourier Series
- Lecture 33 - Fourier Series
- Lecture 34 - Fourier Transform
- Lecture 35 - Introduction to Statistics
- Lecture 36 - Mean, Standard deviation and Distribution
- Lecture 37 - Frequency Distribution and Probability Distribution
- Lecture 38 - Binomial Distribution
- Lecture 39 - Normal Distribution
- Lecture 40 - Hypothesis Testing and Mathematical Modeling



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

NPTEL Video Course - Biotechnology - NOC:Bioengineering: An Interface with Biology and Medicine

Subject Co-ordinator - Prof. Sanjeeva Srivastava

Co-ordinating Institute - IIT - Bombay

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

- Lecture 1 - Why biology for engineers - Part I
- Lecture 2 - Why biology for engineers - Part II
- Lecture 3 - Life processes and Cell
- Lecture 4 - Cell and its properties
- Lecture 5 - Clinician's Perspective - I
- Lecture 6 - Nucleic Acid and Central Dogma
- Lecture 7 - DNA Tools
- Lecture 8 - DNA Tools
- Lecture 9 - DNA Tools and Biotechnology - I
- Lecture 10 - DNA Tools and Biotechnology - II
- Lecture 11 - DNA Tools and Biotechnology - III
- Lecture 12 - DNA Tools and Biotechnology - IV
- Lecture 13 - DNA Tools and Biotechnology - V
- Lecture 14 - DNA Tools and Biotechnology - VI
- Lecture 15 - Clinician's Perspective - II
- Lecture 16 - Genetics - I
- Lecture 17 - Genetics - II
- Lecture 18 - Genetics - III
- Lecture 19 - Genetics - IV
- Lecture 20 - Clinician's Perspective - III
- Lecture 21 - Chromosomal basis of inheritance
- Lecture 22 - Linkage, chromosomal disorders
- Lecture 23 - Classical Genetics Experiments
- Lecture 24 - Bacteria and Viruses
- Lecture 25 - Clinician's Perspective - IV
- Lecture 26 - Cell cycle dysregulation and Cancer
- Lecture 27 - Developmental Biology
- Lecture 28 - Principles and application of Animal Cloning
- Lecture 29 - Evolution

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- Lecture 30 - Clinician's Perspective - V
- Lecture 31 - Amino acids and proteins
- Lecture 32 - Proteins and Proteomics
- Lecture 33 - Techniques to Study Protein and Proteome - I
- Lecture 34 - Techniques to Study Protein and Proteome - II
- Lecture 35 - Bioinformatics - I
- Lecture 36 - Techniques to Study Protein and Proteome - III
- Lecture 37 - Protein Interactions and Microarrays
- Lecture 38 - Protein interactions and Systems biology
- Lecture 39 - Bioinformatics - II
- Lecture 40 - Ethics in Research and Publications

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

NPTEL Video Course - Biotechnology - NOC:Applications of Interactomics using Genomics and Proteomics Technology

Subject Co-ordinator - Prof. Sanjeeva Srivastava

Co-ordinating Institute - IIT - Bombay

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

Lecture 1 - Introduction to Interactomics and Protein Arrays

Lecture 2 - NAPPA Technology and Protein Arrays - I

Lecture 3 - NAPPA Technology and Protein Arrays - II

Lecture 4 - Biomarkers

Lecture 5 - Biomarkers

Lecture 6 - Biomarkers

Lecture 7 - NAPPA and its applications in study of antibody immune response in disease and in drug Screening

Lecture 8 - NAPPA and its applications in study of antibody immune response in disease and in drug screening

Lecture 9 - NAPPA and its applications in study of antibody immune response in disease and in drug screening

Lecture 10 - Using functional proteomics to identify biomarkers and therapeutic targets - I

Lecture 11 - Using functional proteomics to identify biomarkers and therapeutic targets - II

Lecture 12 - Applications of protein microarrays in Malaria Research - I

Lecture 13 - Applications of protein microarrays in Malaria Research - II

Lecture 14 - Applications of protein microarrays in Cancer Research - I

Lecture 15 - Applications of protein microarrays in Cancer Research - II

Lecture 16 - Introduction to Bioprinting and Iris's Optical QC Benefits - I

Lecture 17 - Introduction to Bioprinting and Iris's Optical QC Benefits - II

Lecture 18 - Basics and Applications of Reverse Phase Protein Arrays - I

Lecture 19 - Basics and Applications of Reverse Phase Protein Arrays - II

Lecture 20 - Basics and Applications of Reverse Phase Protein Arrays - III

Lecture 21 - Antibody signatures defined by high-content peptide microarray analysis

Lecture 22 - An overview of label-free technologies - I

Lecture 23 - An overview of label-free technologies - II

Lecture 24 - Mass Spectrometry coupled Interactomics - I

Lecture 25 - Mass Spectrometry coupled Interactomics - II

Lecture 26 - Biomolecular interactions using Bio-Layer Interferometry (BLI) - I

Lecture 27 - Biomolecular interactions using Bio-Layer Interferometry (BLI) - II

Lecture 28 - Biomolecular interaction analytics using MicroScale Thermophoresis

Lecture 29 - Surface Plasmon Resonance- Principles and Assays - I

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

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- Lecture 30 - Surface Plasmon Resonance- Principles and Assays - II
- Lecture 31 - Use of SPR in unravelling domain motif interactions of proteasomal assembly chaperones
- Lecture 32 - Next-Generation Sequencing Technology- Ion Torrent
- Lecture 33 - NGS Technology- Bioinformatics and data analysis - I
- Lecture 34 - NGS Technology- Bioinformatics and data analysis - II
- Lecture 35 - Next-Generation Sequencing Technology-MiSeq System
- Lecture 36 - NGS target enrichment workflow for exomes, targeted panels and beyond
- Lecture 37 - The Human Pathology Atlas
- Lecture 38 - The Human Pathology Atlas
- Lecture 39 - Conclusions and Overview - I (Statistical analysis - I)
- Lecture 40 - Conclusions and overview - II (Statistical analysis - II)

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

NPTEL Video Course - Biotechnology - Enzyme Science and Engineering

Subject Co-ordinator - Prof. Subhash Chand

Co-ordinating Institute - IIT - Delhi

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

- Lecture 1 - Introduction and Scope to Enzyme Science and Engineering
- Lecture 2 - Characteristic Features of Enzymes
- Lecture 3 - Enzymes as Biocatalysts
- Lecture 4 - Enzymatic Catalysis
- Lecture 5 - Specificity of Enzyme Action
- Lecture 6 - Kinetics of Enzyme Catalyzed Reactions
- Lecture 7 - Kinetics of Enzyme Catalyzed Reactions
- Lecture 8 - Deviation from Hyperbolic Enzyme Kinetics
- Lecture 9 - Role of Effector Molecules in Enzyme Kinetics
- Lecture 10 - Reversible Inhibition
- Lecture 11 - Effect of PH and Temperature on Enzyme
- Lecture 12 - Kinetics of Bi substrate Enzyme
- Lecture 13 - Kinetics of Bi substrate Enzyme
- Lecture 14 - Immobilized Enzymes - I
- Lecture 15 - Immobilized Enzymes - II
- Lecture 16 - Immobilized Enzymes - III
- Lecture 17 - Immobilization of Enzymes by Entrapment
- Lecture 18 - Effect of Immobilization
- Lecture 19 - Reactors for Enzyme Catalyzed Reactions
- Lecture 20 - Idealized Enzyme Reactor Performance
- Lecture 21 - Idealized Enzyme Reactor Performance
- Lecture 22 - Kinetic Parameters for IME Systems
- Lecture 23 - Steady State Analysis of Mass Transfer
- Lecture 24 - Steady State Analysis of Mass Transfer
- Lecture 25 - Non Ideal Flow in Continuous Immobilized Enzyme
- Lecture 26 - Applications of Immobilized Enzymes in Process
- Lecture 27 - Analytical Applications
- Lecture 28 - Enzyme Technology Challenges

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

NPTEL Video Course - Biotechnology - NOC:Introduction to Dynamical Models in Biology

Subject Co-ordinator - Prof. Biplab Bose

Co-ordinating Institute - IIT - Guwahati

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

- Lecture 1 - Mathematical modeling in Biology
- Lecture 2 - How to Start Modeling
- Lecture 3 - Modeling the spread of infectious disease
- Lecture 4 - Modeling population growth
- Lecture 5 - Numerical solution of ODE-1
- Lecture 6 - Numerical solution of ODE-2
- Lecture 7 - Simulating ODE-based models
- Lecture 8 - Simulating ODE-based models
- Lecture 9 - Steady state and stability analysis
- Lecture 10 - Steady state and stability analysis
- Lecture 11 - Phase Plane Analysis - I
- Lecture 12 - Phase Plane Analysis - II
- Lecture 13 - Concepts of Bifurcation
- Lecture 14 - Concepts of Bifurcation
- Lecture 15 - Modeling Molecular Processes in Cell
- Lecture 16 - Modeling Molecular Processes in Cell
- Lecture 17 - Modeling Molecular Processes in Cell
- Lecture 18 - Modeling Molecular Processes in Cell
- Lecture 19 - Modeling Cell Signaling
- Lecture 20 - Modeling Cell Signaling
- Lecture 21 - Modeling Cell Signaling
- Lecture 22 - Modeling Transcriptional Circuits-1
- Lecture 23 - Modeling Transcriptional Circuits-2
- Lecture 24 - Online Resources for Mathematical Modeling in Biology

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

NPTEL Video Course - Biotechnology - Animal Physiology

Subject Co-ordinator - Prof. Mainak Das

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Animal Physiology  
Lecture 2 - Animal Physiology  
Lecture 3 - Animal Physiology  
Lecture 4 - Animal Physiology  
Lecture 5 - Animal Physiology  
Lecture 6 - Animal Physiology  
Lecture 7 - Animal Physiology  
Lecture 8 - Animal Physiology  
Lecture 9 - Animal Physiology  
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Lecture 22 - Animal Physiology  
Lecture 23 - Animal Physiology  
Lecture 24 - Animal Physiology  
Lecture 25 - Animal Physiology  
Lecture 26 - Animal Physiology  
Lecture 27 - Animal Physiology  
Lecture 28 - Animal Physiology  
Lecture 29 - Animal Physiology

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

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Lecture 30 - Animal Physiology  
Lecture 31 - Animal Physiology  
Lecture 32 - Animal Physiology  
Lecture 33 - Animal Physiology  
Lecture 34 - Animal Physiology  
Lecture 35 - Animal Physiology  
Lecture 36 - Animal Physiology  
Lecture 37 - Animal Physiology  
Lecture 38 - Animal Physiology  
Lecture 39 - Animal Physiology  
Lecture 40 - Animal Physiology



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

NPTEL Video Course - Biotechnology - Bio electricity

Subject Co-ordinator - Prof. Mainak Das

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Bio electricity  
Lecture 2 - Bio electricity  
Lecture 3 - Bio electricity  
Lecture 4 - Bio electricity  
Lecture 5 - Bio electricity  
Lecture 6 - Bio electricity  
Lecture 7 - Bio electricity  
Lecture 8 - Bio electricity  
Lecture 9 - Bio electricity  
Lecture 10 - Bio electricity  
Lecture 11 - Bio electricity  
Lecture 12 - Bio electricity  
Lecture 13 - Bio electricity  
Lecture 14 - Bio electricity  
Lecture 15 - Bio electricity  
Lecture 16 - Bio electricity  
Lecture 17 - Bio electricity  
Lecture 18 - Bio electricity  
Lecture 19 - Bio electricity  
Lecture 20 - Bio electricity  
Lecture 21 - Bio electricity  
Lecture 22 - Bio electricity  
Lecture 23 - Bio electricity  
Lecture 24 - Bio electricity  
Lecture 25 - Bio electricity  
Lecture 26 - Bio electricity  
Lecture 27 - Bio electricity  
Lecture 28 - Bio electricity  
Lecture 29 - Bio electricity

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

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Lecture 30 - Bio electricity  
Lecture 31 - Bio electricity  
Lecture 32 - Bio electricity  
Lecture 33 - Bio electricity  
Lecture 34 - Bio electricity  
Lecture 35 - Bio electricity  
Lecture 36 - Bio electricity  
Lecture 37 - Bio electricity  
Lecture 38 - Bio electricity  
Lecture 39 - Bio electricity  
Lecture 40 - Bio electricity

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

NPTEL Video Course - Biotechnology - NOC:Human Molecular Genetics

Subject Co-ordinator - Mr.S. Ganesh

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Fundamentals of central dogma, Part 1
- Lecture 2 - Fundamentals of central dogma, Part 2
- Lecture 3 - Fundamentals of central dogma, Part 3
- Lecture 4 - Chromosome Structure and Function
- Lecture 5 - Pedigree Analysis
- Lecture 6 - Complications in Mendelian Pedigree Patterns
- Lecture 7 - DNA Cloning and Hybridization Techniques - Part 1
- Lecture 8 - DNA Cloning and Hybridization Techniques - Part 2
- Lecture 9 - Practice Session 1
- Lecture 10 - Practice Session 2
- Lecture 11 - Mutations and instability of human DNA (Part 1)
- Lecture 12 - Mutations and instability of human DNA (Part 2)
- Lecture 13 - Animal Models for Human Diseases
- Lecture 14 - Positional cloning of genes for monogenic disorders
- Lecture 15 - Human Genome Project and HapMap project

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

NPTEL Video Course - Biotechnology - NOC:Functional Genomics

Subject Co-ordinator - S. Ganesh

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Introduction to Functional Genomics

Lecture 2 - The Genomics Era

Lecture 3 - Epigenetics

Lecture 4 - Forward Genetics vs Reverse Genetics

Lecture 5 - Genome Editing Approaches - Part 1

Lecture 6 - Genome Editing Approaches - Part 2

Lecture 7 - Transcriptomics - Part 1

Lecture 8 - Transcriptomics - Part 2

Lecture 9 - Genome Sequence Databases

Lecture 10 - DNA Sequencing Methods - Part 1

Lecture 11 - DNA Sequencing Methods - Part 2

Lecture 12 - Applications of Next-Generation Sequencing (NGS)

Lecture 13 - Tutorial - Session 1

Lecture 14 - Tutorial - Session 2

Lecture 15 - Genomic Insight into Evolution

Lecture 16 - Genome sequence

Lecture 17 - Outcome of Comparative Genomics

Lecture 18 - Laboratory - Session 1

Lecture 19 - Laboratory - Session 2

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

NPTEL Video Course - Biotechnology - NOC:Bioenergy

Subject Co-ordinator - Prof. Mainak Das

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Introduction

Lecture 2 - Oil Economy of the World

Lecture 3 - Unit of Energy and Introduction of Bioenergy

Lecture 4 - How Biomass Formed on the Earth

Lecture 5 - Road Map of Bioenergy

Lecture 6 - Basic Biomass Technology (Resources and Production)

Lecture 7 - Basics of Mechanism of Light Reaction

Lecture 8 - Exploration of Photosynthesis Process

Lecture 9 - In Photosynthesis Oxygen Comes from Water Molecule

Lecture 10 - Hill Reaction

Lecture 11 - Electron Transport Process in Light Reaction

Lecture 12 - How Carbon dioxide converted in Carbohydrate

Lecture 13 - From Carbon dioxide to two Molecules of 3 - Phospho Glycerate by RUBISCO

Lecture 14 - RUBISCO enzyme

Lecture 15 - Photo respiration and Calvin Cycle

Lecture 16 - Efficiency Calculation of Photosynthesis Process

Lecture 17 - C3 and C4 Plant Structure and Photosynthesis Process

Lecture 18 - Biomass production System and their Categorization

Lecture 19 - Important Parameters for Selecting Biomass Crops

Lecture 20 - Factors Determining the Conversion Process - I

Lecture 21 - Factors Determining the Conversion Process - II

Lecture 22 - Factors Determining the Conversion Process - III

Lecture 23 - Conversion Technology

Lecture 24 - Conversion Process- (Combustion Process)

Lecture 25 - Pyrolysis Process

Lecture 26 - Classification of Pyrolysis

Lecture 27 - Bio Oil - (Solution for Thermal Instability and Corrosivity)

Lecture 28 - Spark Ignition Engine

Lecture 29 - Compression Ignition Engine

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

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- Lecture 30 - Carbonization - Graphene like material
- Lecture 31 - Introduction of Gasification
- Lecture 32 - Thermo Chemical Process of Gasification
- Lecture 33 - Feed Stock Treatment of Gasification
- Lecture 34 - Feed Stock Property
- Lecture 35 - Gasification Types - Up Drift Gasifier
- Lecture 36 - Down drift and Cross Flow Gasifier
- Lecture 37 - Operation and Performance of Fixed Bed Gasifier
- Lecture 38 - Fluidized Bed Gasification
- Lecture 39 - Operation and Performance of Fluidized Bed Gasifier
- Lecture 40 - Biological Root of Gasification and Summary of Course

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

NPTEL Video Course - Biotechnology - NOC:Animal Physiology

Subject Co-ordinator - Prof. Mainak Das

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - An Introduction to Anatomy and Physiology
- Lecture 2 - Organization of living system
- Lecture 3 - Homeostasis and system integration
- Lecture 4 - Positive feedback loop in homeostasis
- Lecture 5 - Chemical basis of organization of the body
- Lecture 6 - Integumentary System - I
- Lecture 7 - Integumentary system - II
- Lecture 8 - Integumentary System - III
- Lecture 9 - Bone and Cartilage - I
- Lecture 10 - Bone and Cartilage - II
- Lecture 11 - Introduction of muscle
- Lecture 12 - Skeletal muscle formation
- Lecture 13 - Anatomy of skeletal muscle
- Lecture 14 - Contraction in muscle
- Lecture 15 - Function of actin and myosin
- Lecture 16 - Length tension relationship of skeletal muscle
- Lecture 17 - Excitation contraction coupling with nervous system
- Lecture 18 - Stretch reflex phenomena
- Lecture 19 - Nervous system anatomy and signaling
- Lecture 20 - Structure and circuit of neurons
- Lecture 21 - Origin of biological cell
- Lecture 22 - Excitability in cell
- Lecture 23 - Ion transportation in the cell
- Lecture 24 - Signal propagation in neurons
- Lecture 25 - Neurotransmitter and action potential
- Lecture 26 - Spatial temporal summation of signal in mesh neurons
- Lecture 27 - Anatomy of Hippo-campus
- Lecture 28 - Epilepsy and memory
- Lecture 29 - Long term potentiation

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

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- Lecture 30 - Long term depression
- Lecture 31 - Alzheimers disease
- Lecture 32 - Parkinsons disease
- Lecture 33 - Amyotrophic lateral sclerosis
- Lecture 34 - Spinal cord injury
- Lecture 35 - Glial cells
- Lecture 36 - Stretch reflex circuit - I
- Lecture 37 - Stretch reflex arc circuit - II
- Lecture 38 - Neuro muscular junction
- Lecture 39 - Hearing system
- Lecture 40 - Olfaction system



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

NPTEL Video Course - Biotechnology - NOC:Cell Culture Technologies

Subject Co-ordinator - Prof. Mainak Das

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Introduction of Cell Culture Technology
- Lecture 2 - Philosophy and complexity in cell culture
- Lecture 3 - To grow the cell outside the body
- Lecture 4 - Cell cycle concept
- Lecture 5 - Dividing cells
- Lecture 6 - Biology of cell culture
- Lecture 7 - Layout(s) and design(s) of cell culture facility
- Lecture 8 - Precautions during designing the lab layout - I
- Lecture 9 - Precautions during designing the lab layout - II
- Lecture 10 - Precautions during designing the lab layout - III
- Lecture 11 - State of the art facility in cell culture lab - I
- Lecture 12 - State of the art facility in cell culture lab - II
- Lecture 13 - Specialized facility in cell culture lab
- Lecture 14 - Interaction of cell and glass/polycarbonate surface - I
- Lecture 15 - Interaction of cell and glass/polycarbonate surface - II
- Lecture 16 - Poly D lysine deposition
- Lecture 17 - Surface chemical analysis
- Lecture 18 - Cell growth process
- Lecture 19 - Cell surface interface
- Lecture 20 - Cell culture substrate patterning
- Lecture 21 - Introduction of define system
- Lecture 22 - Mechanical dissociation of hippocampal tissue
- Lecture 23 - Rules for mechanical dissociation of tissue
- Lecture 24 - Drum molecule testing
- Lecture 25 - Adult hippocampal neuron dissociation
- Lecture 26 - Cell separation and In vitro myelination cell culture mode - I
- Lecture 27 - Cell separation and In vitro myelination cell culture mode - II
- Lecture 28 - Cell separation and In vitro myelination cell culture mode - III
- Lecture 29 - Cell Separation and In vitro myelination cell culture mode - IV

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

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- Lecture 30 - Cell separation and in vitro myelination cell culture mode - V
- Lecture 31 - Fluorescent assisted cell sorting
- Lecture 32 - Condition for regenerated cells
- Lecture 33 - Introduction of skeletal muscle cell culture
- Lecture 34 - Skeletal muscle cell culture
- Lecture 35 - Cardiac muscle cell culture
- Lecture 36 - Advance cell culture modules - I
- Lecture 37 - Advance cell culture modules - II
- Lecture 38 - Advance cell culture modules - III
- Lecture 39 - Advance cell culture modules - IV
- Lecture 40 - Advance cell culture modules - V

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

NPTEL Video Course - Biotechnology - NOC:Forest Biometry

Subject Co-ordinator - Prof. Mainak Das, Dr. Ankur Awadhiya

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Introduction
- Lecture 2 - Recap of formulae
- Lecture 3 - Recap of trigonometry
- Lecture 4 - Measurement of central tendency and dispersion
- Lecture 5 - Graphical presentation of data
- Lecture 6 - Shape of a tree
- Lecture 7 - Metzgers theory
- Lecture 8 - Form factor and form quotients
- Lecture 9 - Taper equations
- Lecture 10 - Making the cuts
- Lecture 11 - Cross-section of a tree
- Lecture 12 - Where to measure the diameter
- Lecture 13 - Callipers - Usages and Issues
- Lecture 14 - Tape
- Lecture 15 - Measurement of bark and growth rings
- Lecture 16 - Tree height
- Lecture 17 - Method of similar triangles
- Lecture 18 - Distance measurements
- Lecture 19 - Angular measurement
- Lecture 20 - LIDAR
- Lecture 21 - Canopy attributes - Part I
- Lecture 22 - Canopy attributes - Part II
- Lecture 23 - Canopy attributes - Part III
- Lecture 24 - Canopy cover and closure
- Lecture 25 - Photogrammetry
- Lecture 26 - Basal area of a tree and stand
- Lecture 27 - Stand basal area, crop diameter and crop age
- Lecture 28 - Point sampling - I
- Lecture 29 - Point sampling - II

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

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- Lecture 30 - Number density and sample calculations
- Lecture 31 - Volume
- Lecture 32 - The Quarter - girth formula
- Lecture 33 - Volume computations in the field
- Lecture 34 - Volume Table
- Lecture 35 - Forest Sampling
- Lecture 36 - Density and mass measurement
- Lecture 37 - Normalized difference vegetation Index (NDVI)
- Lecture 38 - Site quality
- Lecture 39 - Recap - I
- Lecture 40 - Recap - II

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

NPTEL Video Course - Biotechnology - NOC:Introduction to Professional and Scientific Communication

Subject Co-ordinator - Mr. S. Ganesh

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Introduction to the topic

Lecture 2 - Where do research ideas come from?

Lecture 3 - Inductive vs Deductive Reasoning

Lecture 4 - Scientific Hypothesis

Lecture 5 - Scientific Hypothesis (Continued...)

Lecture 6 - Testing the Hypothesis

Lecture 7 - Introduction to Scientific Writing

Lecture 8 - Writing an Abstract

Lecture 9 - Title for a Research Paper

Lecture 10 - Title and Keywords

Lecture 11 - Mileposts for the Article Writing

Lecture 12 - Writing the Methods Section

Lecture 13 - Writing the Results Section

Lecture 14 - Writing Results Section (Continued...)

Lecture 15 - How to Prepare Figures

Lecture 16 - How to Prepare Schematics

Lecture 17 - How to write Introduction and Discussion Sections

Lecture 18 - Finalizing the Manuscript and Ethics in Research

Lecture 19 - Writing a Research Proposal and Preparing for a Presentation

Lecture 20 - Tutorial Session

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

NPTEL Video Course - Biotechnology - NOC:Bioelectrochemistry

Subject Co-ordinator - Prof. Mainak Das

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Basic Concepts - I

Lecture 2 - Basic Concepts - II

Lecture 3 - Key Terms

Lecture 4 - Galvanic Cells - I

Lecture 5 - Galvanic Cells - II

Lecture 6 - Salt Bridge

Lecture 7 - Standard Potentials - I

Lecture 8 - Standard Potentials - II

Lecture 9 - Standard Potentials - III

Lecture 10 - Nernst Equation

Lecture 11 - Relationship between Standard electrode potential ( $E^{\circ}$ ) and Equilibrium constant (K)

Lecture 12 - Cell as chemical probe and Biochemist's formal potential

Lecture 13 - Concept of Concentration Cell - I

Lecture 14 - Concept of Concentration Cell - II

Lecture 15 - Bio-electrochemistry of excitable cells (nerve cells)

Lecture 16 - Types of electrodes

Lecture 17 - Critical care profile and metal electrode

Lecture 18 - pH measurement

Lecture 19 - Redox indicators amperometry

Lecture 20 - Redox proteins, Metalloproteins and Cyclic Voltammetry

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

NPTEL Video Course - Biotechnology - NOC:Bioenergetics of Life Processes

Subject Co-ordinator - Prof. Mainak Das

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Bioenergetics of Life Processes
- Lecture 2 - Bioenergetics
- Lecture 3 - Iron-Sulfur world
- Lecture 4 - Evolution of complex cellular membranes
- Lecture 5 - Charge transfer across membrane
- Lecture 6 - Biological order and energy - I
- Lecture 7 - Biological order and energy - II
- Lecture 8 - Biological order and energy - III
- Lecture 9 - Summary of thermodynamical parameters - I
- Lecture 10 - Summary of thermodynamical parameters - II
- Lecture 11 - Photosynthesis - I
- Lecture 12 - Photosynthesis - II
- Lecture 13 - Photosynthesis - III
- Lecture 14 - Photosynthesis - IV
- Lecture 15 - Photosynthesis - V
- Lecture 16 - Photosynthesis - VI
- Lecture 17 - Photosynthesis - VII
- Lecture 18 - Photosynthesis - VIII
- Lecture 19 - ATP Synthesis
- Lecture 20 - Mitochondria and Chemiosmotic hypothesis

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

NPTEL Video Course - Biotechnology - NOC:WildLife Conservation

Subject Co-ordinator - Dr. Ankur Awadhiya

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Preliminaries
- Lecture 2 - A closer look at Biodiversity
- Lecture 3 - Economics Valuation of Biodiversity
- Lecture 4 - Threats to Biodiversity
- Lecture 5 - Preliminaries
- Lecture 6 - Basics of Sampling
- Lecture 7 - Distance Sampling - I
- Lecture 8 - Distance Sampling - II
- Lecture 9 - Radio-telemetry
- Lecture 10 - Behavioural monitoring
- Lecture 11 - What is a habitat
- Lecture 12 - Habitat degradation, loss, fragmentation and displacement
- Lecture 13 - Reserve selection and design
- Lecture 14 - Habitat management and improvement
- Lecture 15 - Some terminologies
- Lecture 16 - Some common wildlife diseases
- Lecture 17 - Principles of disease management
- Lecture 18 - Preliminaries
- Lecture 19 - Mechanical capture
- Lecture 20 - Chemical capture
- Lecture 21 - Capture myopathy
- Lecture 22 - Care of immobilised animal
- Lecture 23 - Legal aspects of capture and restraint
- Lecture 24 - Other topics in capture and restraint
- Lecture 25 - Preliminaries and introduction to genetics
- Lecture 26 - Population genetics
- Lecture 27 - Chromosomal and genetic disorders, inbreeding
- Lecture 28 - Population viability analysis
- Lecture 29 - Reintroductions and outbreeding

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

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- Lecture 30 - Fundamentals
- Lecture 31 - Zoos and their management
- Lecture 32 - Botanical gardens
- Lecture 33 - Other aspects
- Lecture 34 - Impacts of climate change
- Lecture 35 - Plastics and biodiversity
- Lecture 36 - Oil spills
- Lecture 37 - Crisis and learnings
- Lecture 38 - Revision - I
- Lecture 39 - Revision - II
- Lecture 40 - Revision - III

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

NPTEL Video Course - Biotechnology - NOC:Nanotechnology in Agriculture

Subject Co-ordinator - Prof. Mainak Das

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Introduction
- Lecture 2 - What is Nanotechnology
- Lecture 3 - An outline
- Lecture 4 - Agriculture
- Lecture 5 - Modern Agriculture
- Lecture 6 - A Restart
- Lecture 7 - Classifying nanomaterials Based on Shape and Geometry
- Lecture 8 - Classifying Nanomaterials Based on Chemical Nature
- Lecture 9 - Physical Approaches to Nanomaterial Synthesis
- Lecture 10 - Biological and Chemical Approaches to Nanomaterial Synthesis
- Lecture 11 - Detailed Physical Techniques - I
- Lecture 12 - Detailed Physical Techniques - II
- Lecture 13 - Detailed Chemical Techniques
- Lecture 14 - Detailed Biological Techniques
- Lecture 15 - Basic Characterisation Techniques of Nanomaterials
- Lecture 16 - Characterisation techniques for physical and chemical surface properties of a material
- Lecture 17 - Nanomaterials in Agriculture
- Lecture 18 - Iron pyrite and seed pre-treatment
- Lecture 19 - nano-Pyrite and its lab trial with chickpea
- Lecture 20 - nano-Pyrite field trial with spinach and its mechanistic details
- Lecture 21 - Mechanistic details of the action of Pyrite nano-particle
- Lecture 22 - Application of Pyrite nano-particle in different crops
- Lecture 23 - Application of different nano-particles in Agriculture - I
- Lecture 24 - Benefits of nanoparticles in Agriculture
- Lecture 25 - Nanotechnology in animal production
- Lecture 26 - Antioxidant nanomaterial in animal production - I
- Lecture 27 - Antioxidant nanomaterial in animal production - II
- Lecture 28 - Antioxidant nanomaterial in animal production - III
- Lecture 29 - Antioxidant nanomaterial in skeletal muscle development - I

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

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- Lecture 30 - Antioxidant nanomaterial in skeletal muscle development - II
- Lecture 31 - Skeletal muscle development and nanomaterial intervention
- Lecture 32 - Fabrication of nano-micro devices to study force generation in muscles
- Lecture 33 - Summarising role of nanomaterials in animal production
- Lecture 34 - Nanomaterials in food processing and preservation - I
- Lecture 35 - Nanomaterials in food processing and preservation - II
- Lecture 36 - Multifunctionality of nanomaterial
- Lecture 37 - Futuristic multifunctional, sustainable and green nanomaterial
- Lecture 38 - Case study of Titanium dioxide - I
- Lecture 39 - Case study of Titanium dioxide - II
- Lecture 40 - The future

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

NPTEL Video Course - Biotechnology - NOC:Wild Life Ecology

Subject Co-ordinator - Dr. Ankur Awadhiya, Prof. Mainak Das

Co-ordinating Institute - IIT - Kanpur

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

- Lecture 1 - Introduction to the course
- Lecture 2 - A historical overview of Ecology
- Lecture 3 - Ecology and Evolution
- Lecture 4 - The levels of organisation
- Lecture 5 - Species abundance and composition
- Lecture 6 - Biodiversity - II
- Lecture 7 - Positive Interactions
- Lecture 8 - Negative Interactions
- Lecture 9 - Study of Behaviour and Behavioral Ecology
- Lecture 10 - Food chains, Food webs and trophic levels
- Lecture 11 - Primary Production
- Lecture 12 - Nutrient Cycles
- Lecture 13 - Population parameters and demographic techniques
- Lecture 14 - Population growth and regulation
- Lecture 15 - Population studies and applications
- Lecture 16 - Community nature and parameters
- Lecture 17 - Community changes and ecological succession
- Lecture 18 - Community organisation
- Lecture 19 - Biography
- Lecture 20 - Why are things where they are?
- Lecture 21 - Some push and pull factors in greater detail
- Lecture 22 - Threats to species
- Lecture 23 - In-situ conservation
- Lecture 24 - Ex-situ conservation
- Lecture 25 - Introduction and impacts
- Lecture 26 - Human population growth and food requirements
- Lecture 27 - Sustainable development
- Lecture 28 - Oil spills
- Lecture 29 - Plastic and biodiversity

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

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- Lecture 30 - Impacts of climate change
- Lecture 31 - Optimum yield problem
- Lecture 32 - Biological control
- Lecture 33 - Ecotoxicology and pollution management, Restoration ecology
- Lecture 34 - Revision
- Lecture 35 - Revision
- Lecture 36 - Revision

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

NPTEL Video Course - Chemistry and Biochemistry - BioChemistry I

Subject Co-ordinator - Prof. S. Dasgupta

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Amino Acids - I  
Lecture 2 - Amino Acids - II  
Lecture 3 - Protein Structure - I  
Lecture 4 - Protein structure - II  
Lecture 5 - Protein Structure - III  
Lecture 6 - Protein Structure - IV  
Lecture 7 - Enzymes - I  
Lecture 8 - Enzymes - II  
Lecture 9 - Enzymes - III  
Lecture 10 - Enzymes Mechanisms - I  
Lecture 11 - Enzymes Mechanisms - II  
Lecture 12 - Myoglobin and Hemoglobin  
Lecture 13 - Lipids and Membranes - I  
Lecture 14 - Lipids and Membranes - II  
Lecture 15 - Membrane Transport  
Lecture 16 - Carbohydrates - I  
Lecture 17 - Carbohydrates - II  
Lecture 18 - Vitamins and Coenzymes - I  
Lecture 19 - Vitamins and Coenzymes - II  
Lecture 20 - Nucleic Acids - I  
Lecture 21 - Nucleic Acids - II  
Lecture 22 - Nucleic Acids - III  
Lecture 23 - Bioenergetics - I  
Lecture 24 - Bioenergetics - II  
Lecture 25 - Metabolism - I  
Lecture 26 - Metabolism - II  
Lecture 27 - Metabolism - III  
Lecture 28 - Overview of the Course

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

NPTEL Video Course - Biotechnology - NOC:Industrial Biotechnology

Subject Co-ordinator - Prof. Debabrata Das

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Industrial Biotechnology

Lecture 2 - Development of industrial strain

Lecture 3 - Medium characteristics and biochemical pathways

Lecture 4 - Chemical reaction kinetics

Lecture 5 - Chemical reaction analysis (Continued...)

Lecture 6 - Different types of reactors

Lecture 7 - Reactor analysis

Lecture 8 - Reactor analysis (Continued...)

Lecture 9 - Stoichiometry of bioprocesses

Lecture 10 - Stoichiometry of bioprocesses (Continued...)

Lecture 11 - Enzymatic reaction Kinetics

Lecture 12 - Enzymatic reaction Kinetics (Continued...)

Lecture 13 - Immobilization techniques

Lecture 14 - Immobilization techniques (Continued...)

Lecture 15 - Life cycle of the microbial cell, Microbial growth kinetics, product formation and substrate degradation

Lecture 16 - Microbial growth kinetics, product formation and substrate degradation (Continued...)

Lecture 17 - Microbial growth kinetics, product formation and substrate degradation (Continued...)

Lecture 18 - Overview of the fermenter

Lecture 19 - Flow diagrams and pumps and valves used in fermentation industries

Lecture 20 - Flow diagrams and pumps and valves used in fermentation industries (Continued...)

Lecture 21 - Upstream processing

Lecture 22 - Upstream processing

Lecture 23 - Upstream processing

Lecture 24 - Downstream processing

Lecture 25 - Downstream processing

Lecture 26 - Downstream processing

Lecture 27 - Ethanol fermentation

Lecture 28 - Ethanol fermentation (Continued...)

Lecture 29 - Brewing industry

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

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- Lecture 30 - Brewing industry (Continued...)
- Lecture 31 - Wine industry
- Lecture 32 - Vinegar production
- Lecture 33 - Citric acid production
- Lecture 34 - Citric acid production (Continued...)
- Lecture 35 - Citric acid production (Continued...)
- Lecture 36 - Lactic acid production
- Lecture 37 - Lactic acid production (Continued...)
- Lecture 38 - Glutamic acid production
- Lecture 39 - Penicillin production
- Lecture 40 - Penicillin production (Continued...)
- Lecture 41 - Cephalosporin production
- Lecture 42 - Streptomycin production
- Lecture 43 - Baker's yeast fermentation
- Lecture 44 - Baker's yeast fermentation (Continued...)
- Lecture 45 - Fodder yeast production
- Lecture 46 - Spirulina production
- Lecture 47 - Alpha amylase production
- Lecture 48 - High fructose corn syrup production
- Lecture 49 - Metal leaching
- Lecture 50 - Cheese production
- Lecture 51 - Cheese production (Continued...)
- Lecture 52 - Biodiesel production
- Lecture 53 - Butanol production
- Lecture 54 - Biofertilizer
- Lecture 55 - Aerobic effluent treatment process
- Lecture 56 - Aerobic effluent treatment process (Continued...)
- Lecture 57 - Anaerobic effluent treatment process
- Lecture 58 - Anaerobic effluent treatment process
- Lecture 59 - 10 m<sup>3</sup> Pilot Plant operation for Biohydrogen production
- Lecture 60 - Summary and conclusion



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

NPTEL Video Course - Biotechnology - NOC:Aspects Of Biochemical Engineering

Subject Co-ordinator - Prof. Debabrata Das

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introduction  
Lecture 2 - Microbiology - I  
Lecture 3 - Microbiology - II  
Lecture 4 - Fundamentals of Biochemistry  
Lecture 5 - Bioproducts and their market values  
Lecture 6 - Stoichiometry of Biochemical Processes - I  
Lecture 7 - Stoichiometry of Biochemical Processes - II  
Lecture 8 - Stoichiometry of Biochemical Processes - III  
Lecture 9 - Reaction Thermodynamics - I  
Lecture 10 - Reaction Thermodynamics - II  
Lecture 11 - Kinetics of homogeneous chemical reactions - I  
Lecture 12 - Kinetics of homogeneous chemical reactions - II  
Lecture 13 - Kinetics of homogeneous chemical reactions - III  
Lecture 14 - Kinetics of homogeneous chemical reactions - IV  
Lecture 15 - Kinetics of homogeneous chemical reactions - V  
Lecture 16 - Different types of reactors  
Lecture 17 - Reactor analysis - I  
Lecture 18 - Reactor analysis - II  
Lecture 19 - Reactor analysis - III  
Lecture 20 - Reactor analysis - IV  
Lecture 21 - Kinetics of enzyme catalyzed reactions using free enzymes - I  
Lecture 22 - Kinetics of enzyme catalyzed reactions using free enzymes - II  
Lecture 23 - Kinetics of enzyme catalyzed reactions using free enzymes - III  
Lecture 24 - Kinetics of enzyme catalyzed reactions using free enzymes - IV  
Lecture 25 - Kinetics of enzyme catalyzed reactions using free enzymes - V  
Lecture 26 - Kinetics of enzyme catalyzed reactions using free enzymes - VI  
Lecture 27 - Immobilization of Enzymes - I  
Lecture 28 - Immobilization of Enzymes - II  
Lecture 29 - Kinetics of enzyme catalyzed reactions using immobilized enzymes - I

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

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- Lecture 30 - Kinetics of enzyme catalyzed reactions using immobilized enzymes - II
- Lecture 31 - Kinetics of substrate utilization, product formation and biomass production of microbial cells - I
- Lecture 32 - Kinetics of substrate utilization, product formation and biomass production of microbial cells - II
- Lecture 33 - Kinetics of substrate utilization, product formation and biomass production of microbial cells - III
- Lecture 34 - Kinetics of substrate utilization, product formation and biomass production of microbial cells - IV
- Lecture 35 - Kinetics of substrate utilization, product formation and biomass production of microbial cells - V
- Lecture 36 - Kinetics of substrate utilization, product formation and biomass production of microbial cells - VI
- Lecture 37 - Kinetics of substrate utilization, product formation and biomass production of microbial cells - VII
- Lecture 38 - Kinetics of substrate utilization, product formation and biomass production of microbial cells - VIII
- Lecture 39 - Kinetics of substrate utilization, product formation and biomass production of microbial cells - IX
- Lecture 40 - Kinetics of substrate utilization, product formation and biomass production of microbial cells - X
- Lecture 41 - Kinetics of substrate utilization, product formation and biomass production of microbial cells - XI
- Lecture 42 - Design and analysis of activated sludge process - I
- Lecture 43 - Design and analysis of activated sludge process - II
- Lecture 44 - Design and analysis of anaerobic digestion process
- Lecture 45 - Scale up of Bioreactor - I
- Lecture 46 - Scale up of Bioreactor - II
- Lecture 47 - Transport Phenomenon in Bioprocess - I
- Lecture 48 - Transport Phenomenon in Bioprocess - II
- Lecture 49 - Transport Phenomenon in Bioprocess - III
- Lecture 50 - Transport Phenomenon in Bioprocess - IV
- Lecture 51 - Air sterilization - I
- Lecture 52 - Air sterilization - II
- Lecture 53 - Medium sterilization - I
- Lecture 54 - Medium sterilization - II
- Lecture 55 - Operation of industrial fermenter and material analysis
- Lecture 56 - Process control of the biochemical processes
- Lecture 57 - Downstream processing - I
- Lecture 58 - Downstream processing - II
- Lecture 59 - Economic analysis of the biochemical processes
- Lecture 60 - Summary and Conclusion

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

NPTEL Video Course - Biotechnology - NOC:Biomicrofluidics

Subject Co-ordinator - Prof. Tapas Kumar Maiti, Prof. Suman Chakraborty

Co-ordinating Institute - IIT - Kharagpur

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

- Lecture 1 - Introduction to Biomicrofluidics
- Lecture 2 - Introduction to Biomicrofluidics (Continued...)
- Lecture 3 - Engineers' guide to the cell
- Lecture 4 - Fluidics in living systems and mechanobiology
- Lecture 5 - Pressure Driven Flows
- Lecture 6 - Surface tension driven flows
- Lecture 7 - Modulating surface tension
- Lecture 8 - Lab on a CD
- Lecture 9 - Introduction to Electrokinetics - Part I
- Lecture 10 - Introduction to Electrokinetics - Part II
- Lecture 11 - Microfluidic cell culture - Part I
- Lecture 12 - Microfluidic cell culture - Part II
- Lecture 13 - On-chip cellular assay techniques - Part I
- Lecture 14 - On-chip cellular assay techniques - Part II
- Lecture 15 - Microfluidics for understanding biology
- Lecture 16 - Organ-on-a-chip
- Lecture 17 - Lab-on-a-chip for genetic analysis
- Lecture 18 - Microfluidic technology for monoclonal antibody production
- Lecture 19 - Microfluidics for Healthcare
- Lecture 20 - Microfluidics for Healthcare

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

NPTEL Video Course - Biotechnology - Downstream Processing

Subject Co-ordinator - Prof. Mukesh Doble

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Introduction
- Lecture 2 - Mass Balance, Heat Balance, Flow sheet
- Lecture 3 - Costing
- Lecture 4 - Costing (Continued...) Physical and Chemical Principles in Down Stream
- Lecture 5 - Problems in Mass Balance, Flow sheet
- Lecture 6 - Cell Breakage
- Lecture 7 - Cell Breakage (Continued...)
- Lecture 8 - Solid Liquid Separation
- Lecture 9 - Solid Liquid Separation (Continued...)
- Lecture 10 - Solid Liquid Separation - Problems
- Lecture 11 - Pre-Treatment and Filters
- Lecture 12 - Adsorption
- Lecture 13 - Adsorption (Continued...)
- Lecture 14 - Adsorption (Continued...)
- Lecture 15 - Adsorption (Continued...)
- Lecture 16 - Liquid Liquid Extraction
- Lecture 17 - Liquid Liquid Extraction (Continued...)
- Lecture 18 - Liquid Liquid Extraction (Continued...)
- Lecture 19 - Liquid Liquid Extraction (Continued...)
- Lecture 20 - Reversed Micellar and Aqueous Two Phase Extraction
- Lecture 21 - Membranes
- Lecture 22 - Membranes (Continued...)
- Lecture 23 - Membranes (Continued...)
- Lecture 24 - Membranes (Continued...)
- Lecture 25 - Precipitation
- Lecture 26 - Chromatography
- Lecture 27 - Chromatography (Continued...)
- Lecture 28 - Chromatography (Continued...)
- Lecture 29 - Chromatography (Continued...)

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- Lecture 30 - Chromatography (Continued...)
- Lecture 31 - Chromatography (Continued...)
- Lecture 32 - Chromatography (Continued...)
- Lecture 33 - HPLC
- Lecture 34 - HPLC
- Lecture 35 - Crystallisation
- Lecture 36 - Drying
- Lecture 37 - Drying and Distillation
- Lecture 38 - Stabilisation, Utilities and Other Auxiliary Processes And Absorption
- Lecture 39 - Absorption, Electrophoresis/SDS PAGE
- Lecture 40 - Future Trends, Summary of Course

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

NPTEL Video Course - Biotechnology - Thermodynamics

Subject Co-ordinator - Prof. G.K. Suraishkumar

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Introduction and Review

Lecture 2 - Need for Analysis Additional Thermodynamic Functions State and Path Variables

Lecture 3 - Equations for a Closed system Chemical Potential Concept Gibbs-Duhem Equation

Lecture 4 - Maxwell's relations

Lecture 5 - Inter-Relationships between Thermodynamic Variables

Lecture 6 - Some Useful Mathematical Manipulations

Lecture 7 - Thermodynamic Relations for a Closed System with 1 mole of a pure Substances

Lecture 8 - Maximum Work, Lost Work Review of Closed Systems

Lecture 9 - Open Systems

Lecture 10 - Equations of State - Virial Equations

Lecture 11 - Equations of State - Cubic Equations

Lecture 12 - Volume Estimation

Lecture 13 - Volume Estimation (Continued...) Generalized correlations

Lecture 14 - Generalized correlations (Continued...) Residual Properties

Lecture 15 - Residual Properties (Continued...)

Lecture 16 - Generalized Correlations and Residual Properties

Lecture 17 - Fugacity Coefficient Estimation

Lecture 18 - Review of Module 3

Lecture 19 - Learning Aspects Chemical Potential Formulations

Lecture 20 - Lewis and Randall rule partial Molar Properties

Lecture 21 - Partial Molar Property Estimation from Mixing Experiments

Lecture 22 - Partial Molar Property Estimation (Continued...) Excess Property

Lecture 23 - Activity Coefficient from Excess Property

Lecture 24 - Activity Coefficient from Excess Property (Continued...)

Lecture 25 - Activity Coefficient from Excess Property (Continued...) Models for Activity Coefficient in Binary

Lecture 26 - Models for Activity Coefficient in Binary Systems (Continued...)

Lecture 27 - Review of Module 4

Lecture 28 - Criteria for Phase Equilibrium Phase Rule for Non-reacting Biosystems

Lecture 29 - Clausius - Clayperon Equation

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- Lecture 30 - Clausius - Clayperon Equation (Continued...) vapour-Liquid Equilibrium
- Lecture 31 - Vapour-Liquid Equilibrium (Continued...) Estimation of Fugacity coefficient from Equilibrium P-V
- Lecture 32 - Liquid/Liquid and Solid/Liquid Equilibria
- Lecture 33 - Review of Module 5
- Lecture 34 - Criteria for Bio-reaction Equilibria
- Lecture 35 - Phase rule for Reacting Biosystems Equilibrium constants
- Lecture 36 - Effect of Temperature and Pressure on the Equilibrium constants
- Lecture 37 - Reaction in Liquid or Solid Phases
- Lecture 38 - Free energy Changes for some Bioreactions
- Lecture 39 - Electrolytes
- Lecture 40 - Course Review

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

NPTEL Video Course - Biotechnology - NOC:Principles of Downstream techniques in Bioprocess

Subject Co-ordinator - Prof. Mukesh Doble

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Introduction
- Lecture 2 - Mass balance, Heat Balance, Flow sheet
- Lecture 3 - Costing
- Lecture 4 - Cell Breakage
- Lecture 5 - Solid Liquid Separation
- Lecture 6 - Pre-treatment and Filters/centrifuge
- Lecture 7 - Liquid-Liquid Extraction
- Lecture 8 - Liquid-Liquid extraction (Continued...)
- Lecture 9 - Adsorption
- Lecture 10 - Reversed micellar and aqueous two phase extraction
- Lecture 11 - Membranes
- Lecture 12 - Membranes (Continued...)
- Lecture 13 - Product stabilization, Drying, Lyophilisation
- Lecture 14 - Precipitation and crystallization
- Lecture 15 - Electrophoresis / SDS PAGE
- Lecture 16 - Chromatography
- Lecture 17 - Chromatography (Continued...1)
- Lecture 18 - Chromatography (Continued...2)
- Lecture 19 - Chromatography (Continued...3)
- Lecture 20 - Future trends, Other downstream operations/Summary of the course

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

NPTEL Video Course - Biotechnology - NOC:Biostatistics and Design of Experiments

Subject Co-ordinator - Prof. Mukesh Doble

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Introduction

Lecture 2 - Experimental Design Strategy

Lecture 3 - Data types

Lecture 4 - Poisson Distribution

Lecture 5 - Normal Distribution

Lecture 6 - Standardized Normal Distribution / t-distribution

Lecture 7 - t-distribution/confidence interval

Lecture 8 - Statistical tests

Lecture 9 - t-Test

Lecture 10 - t-Tests

Lecture 11 - t-test

Lecture 12 - F-tests

Lecture 13 - F-tests

Lecture 14 - ANOVA

Lecture 15 - ANOVA

Lecture 16 - Anova

Lecture 17 - Anova

Lecture 18 - Anova

Lecture 19 - Anova

Lecture 20 - Anova

Lecture 21 - Normality test / Odds ratio

Lecture 22 - Chi square distribution

Lecture 23 - Chi square distribution / test

Lecture 24 - Chi square test

Lecture 25 - Chi square test and Weibull Distribution

Lecture 26 - Weibull Distribution

Lecture 27 - Weibull distribution.

Lecture 28 - Non-parametric test

Lecture 29 - Non parametric test/homogeneity of variance / beta distribution

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

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- Lecture 30 - Exponential / hypergeometric distributions
- Lecture 31 - Hypergeometric / Log normal distribution
- Lecture 32 - Design of experiments (DOE) - Introduction
- Lecture 33 - Factorial Design
- Lecture 34 - Full factorial design
- Lecture 35 - Fractional factorial design
- Lecture 36 - Other designs
- Lecture 37 - Second order designs
- Lecture 38 - Second order design
- Lecture 39 - Regression analysis
- Lecture 40 - Control charts

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

NPTEL Video Course - Biotechnology - NOC:Bioreactors

Subject Co-ordinator - Prof. G.K. Suraishkumar

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Introduction  
Lecture 2 - Sterilization  
Lecture 3 - Solution to PP 1.1  
Lecture 4 - Some important concepts  
Lecture 5 - Enzyme bioreactors, enzyme kinetics  
Lecture 6 - Solution to PP 2.1  
Lecture 7 - Inhibited enzyme kinetics  
Lecture 8 - Solution to PP 2.2  
Lecture 9 - Measurement principles and methods  
Lecture 10 - Batch growth kinetics  
Lecture 11 - Solution to PP 3.1  
Lecture 12 - Bioreactor analysis  
Lecture 13 - Solution to PP 3.2  
Lecture 14 - Bioreactor environment parameters  
Lecture 15 - Bioreactor env. par. (DO)  
Lecture 16 - Solution to PP 4.1  
Lecture 17 - Shear stress, scale-up, scale-down  
Lecture 18 - Cell view  
Lecture 19 - Solution to PP 5.1  
Lecture 20 - Culture status, metabolic flux analysis  
Lecture 21 - Course summary

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

NPTEL Video Course - Biotechnology - NOC:Medical Biomaterials

Subject Co-ordinator - Prof. Mukesh Doble

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Introduction to Biomaterials
- Lecture 2 - Background history
- Lecture 3 - History
- Lecture 4 - Properties - Mechanical and Physico-chemical
- Lecture 5 - Properties - Mechanical and Physico-chemical
- Lecture 6 - Mechanical properties
- Lecture 7 - Mechanical Properties (Continued...)
- Lecture 8 - Resorbability, biodegradation
- Lecture 9 - Resorbability, biodegradation (Continued...)
- Lecture 10 - Biofilm
- Lecture 11 - Biofilm (Continued...)
- Lecture 12 - Biofilm (Continued...)
- Lecture 13 - Biofilm (Continued...)
- Lecture 14 - Material characterization - Analytical instruments
- Lecture 15 - Analytical instruments
- Lecture 16 - Analytical instruments (Continued...)
- Lecture 17 - Analytical instruments (Continued...)
- Lecture 18 - Biological responses, compatibility, cytotoxicity
- Lecture 19 - Proteins, Tissue and blood Response
- Lecture 20 - Cell-biomaterial interaction
- Lecture 21 - Animal trials (in vivo)
- Lecture 22 - Animal trials
- Lecture 23 - Metals-types, classifications, applications
- Lecture 24 - Metals - properties
- Lecture 25 - Metals - properties (Continued...)
- Lecture 26 - Metals - properties (Continued...)
- Lecture 27 - Metals
- Lecture 28 - Polymers-types, classifications, applications
- Lecture 29 - Polymers

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- Lecture 30 - Polymers (Continued...)
- Lecture 31 - Polymer blends
- Lecture 32 - Natural biopolymers
- Lecture 33 - Natural biopolymers - (Continued...)
- Lecture 34 - Biopolymers- proteins / hydrogels
- Lecture 35 - Hydrogels
- Lecture 36 - Experiments
- Lecture 37 - surface modification-Demonstration
- Lecture 38 - Ceramics
- Lecture 39 - Cardiovascular and ocular biomaterials
- Lecture 40 - Sterilisation/Device failure

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

NPTEL Video Course - Biotechnology - NOC:BioInformatics - Algorithms and Applications

Subject Co-ordinator - Prof. M. Michael Gromiha

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Concepts and importance of Bioinformatics  
Lecture 2 - Complexities in biological systems  
Lecture 3 - DNA sequence analysis  
Lecture 4 - Sequence based parameters  
Lecture 5 - Database  
Lecture 6 - Database categories  
Lecture 7 - Protein structure and function - I  
Lecture 8 - Protein structure and function - II  
Lecture 9 - Protein sequence databases - I  
Lecture 10 - Protein sequence databases - II  
Lecture 11 - Pairwise alignment - I  
Lecture 12 - Pairwise alignment - II  
Lecture 13 - Uniprot Demo  
Lecture 14 - Sequence alignment - I  
Lecture 15 - Sequence alignment - II  
Lecture 16 - Sequence alignment  
Lecture 17 - Sequence alignment  
Lecture 18 - Conservation score - I  
Lecture 19 - Conservation score - II  
Lecture 20 - Blast Demo  
Lecture 21 - Phylogenetic trees - I  
Lecture 22 - Phylogenetic trees - II  
Lecture 23 - Protein sequence analysis - I  
Lecture 24 - Protein sequence analysis - II  
Lecture 25 - Hydrophobicity profiles  
Lecture 26 - Patterns and PSSM profiles  
Lecture 27 - Construction of Non-redundant datasets - I  
Lecture 28 - Non-redundant datasets - II  
Lecture 29 - Protein secondary structure

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- Lecture 30 - Secondary structure prediction - I
- Lecture 31 - Secondary structure prediction - II
- Lecture 32 - Secondary structure prediction - III
- Lecture 33 - Protein tertiary structure - I
- Lecture 34 - Protein tertiary structure - II
- Lecture 35 - Protein structure analysis - I
- Lecture 36 - Protein structure analysis - II
- Lecture 37 - Protein structure analysis - III
- Lecture 38 - Demo
- Lecture 39 - Protein structure analysis - IV
- Lecture 40 - Protein structure prediction - I
- Lecture 41 - Protein structure prediction - II
- Lecture 42 - Protein stability - I
- Lecture 43 - Protein stability - II
- Lecture 44 - Demo
- Lecture 45 - Stabilizing residues
- Lecture 46 - Thermodynamic database
- Lecture 47 - Stability of proteins upon mutations - I
- Lecture 48 - Stability of proteins upon mutations - II
- Lecture 49 - Demo
- Lecture 50 - Protein folding rate - I
- Lecture 51 - Protein folding rate - II
- Lecture 52 - Protein interactions - I
- Lecture 53 - Protein interactions - II
- Lecture 54 - Computer aided drug design - I
- Lecture 55 - Computer aided drug design - II
- Lecture 56 - Virtual screening - I
- Lecture 57 - Virtual screening - II
- Lecture 58 - QSAR - I
- Lecture 59 - QSAR - II
- Lecture 60 - Demo
- Lecture 61 - awk programming - I
- Lecture 62 - awk programming - II
- Lecture 63 - Development of algorithms - I
- Lecture 64 - Development of algorithms - II
- Lecture 65 - Applications of bioinformatics - I
- Lecture 66 - Applications of bioinformatics - II
- Lecture 67 - Overview - I
- Lecture 68 - Overview - II

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

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Lecture 69 - Demo

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

NPTEL Video Course - Biotechnology - NOC:Demystifying the Brain

Subject Co-ordinator - Dr. V Srinivasa Chakravarthy

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - The Whole and Its Parts

Lecture 2 - Understanding Brain's Shape - Segment 1 - Brain size and intelligence

Lecture 3 - Understanding Brain's Shape - Segment 2 - Save Wire Principle

Lecture 4 - Understanding Brain's Shape - Segment 3 - Brain Evolution

Lecture 5 - Neurons and Neural Signaling

Lecture 6 - Neural Signalling

Lecture 7 - Networks that Learn - Segment 1

Lecture 8 - Multilayer Perceptrons Applications in Psychology and Neuroscience

Lecture 9 - Organization of the Central Nervous System-Segment 1 - Cortex

Lecture 10 - Organization of the Central Nervous System-Segment 2 - Subcortical Structures

Lecture 11 - Maps in the Brain - Segment 1

Lecture 12 - Maps in the Brain - Segment 2

Lecture 13 - Emotions in the Brain - Segment 1

Lecture 14 - Emotions in the Brain - Segment 2

Lecture 15 - Memories and Holograms - Segment 1

Lecture 16 - Memories and Holograms - Segment 2

Lecture 17 - Consciousness - Segment 1

Lecture 18 - Consciousness - Segment 2

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

NPTEL Video Course - Biotechnology - NOC:Computational Systems Biology

Subject Co-ordinator - Prof. Karthik Raman

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Introduction  
Lecture 2 - Introduction to Modelling  
Lecture 3 - Introduction to Modelling  
Lecture 4 - Fundamentals of Mathematical Modelling  
Lecture 5 - Fundamentals of Mathematical Modelling  
Lecture 6 - Fundamentals of Mathematical Modelling  
Lecture 7 - Some Example Models  
Lecture 8 - Representation of Biological Networks  
Lecture 9 - Lab  
Lecture 10 - Lab  
Lecture 11 - Lab  
Lecture 12 - Lab  
Lecture 13 - Introduction to Networks  
Lecture 14 - Introduction to Networks  
Lecture 15 - Introduction to Network Biology  
Lecture 16 - Introduction to Network Biology  
Lecture 17 - Introduction to Network Biology  
Lecture 18 - Network Biology  
Lecture 19 - Network Models  
Lecture 20 - Network Models  
Lecture 21 - Biological Networks  
Lecture 22 - Network Perturbations  
Lecture 23 - Community Detection  
Lecture 24 - Network Motifs  
Lecture 25 - Lab  
Lecture 26 - Lab  
Lecture 27 - Lab  
Lecture 28 - Network Biology  
Lecture 29 - Lab

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- Lecture 30 - Lab
- Lecture 31 - Reconstruction of Gene Regulatory Networks
- Lecture 32 - Reconstruction of Protein Networks
- Lecture 33 - Reconstruction of Signalling Networks
- Lecture 34 - Reconstruction of Signalling Networks
- Lecture 35 - Introduction to Dynamic Modelling
- Lecture 36 - Introduction to Dynamic Modelling
- Lecture 37 - Introduction to Dynamic Modelling
- Lecture 38 - Lab
- Lecture 39 - Lab
- Lecture 40 - Parameter Estimation
- Lecture 41 - Parameter Estimation
- Lecture 42 - Parameter Estimation
- Lecture 43 - Methods for Parameter Estimation
- Lecture 44 - Direct Search Methods
- Lecture 45 - Genetic Algorithms
- Lecture 46 - Genetic Algorithms
- Lecture 47 - Other Evolutionary Algorithms
- Lecture 48 - PyGMO
- Lecture 49 - Dynamic Modelling Recap
- Lecture 50 - Lab
- Lecture 51 - Guest Lecture
- Lecture 52 - Guest Lecture
- Lecture 53 - Guest Lecture
- Lecture 54 - Guest Lecture
- Lecture 55 - Guest Lecture
- Lecture 56 - Constraint-based Modelling of Metabolic Networks
- Lecture 57 - Flux Balance Analysis
- Lecture 58 - Flux Balance Analysis
- Lecture 59 - Flux Balance Analysis
- Lecture 60 - Other Constraint-Based Approaches
- Lecture 61 - Other Constraint-Based Approaches
- Lecture 62 - Lab
- Lecture 63 - Perturbations to Metabolic Networks
- Lecture 64 - Lab
- Lecture 65 - Understanding FBA
- Lecture 66 - Understanding FBA
- Lecture 67 - Perturbations to Metabolic Networks
- Lecture 68 - Perturbations to Metabolic Networks

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

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- Lecture 69 - Perturbations to Metabolic Networks
- Lecture 70 - Constraint-based Modelling of Metabolic Networks
- Lecture 71 - Lab
- Lecture 72 - Integrating Regulatory Information into Constraint-Based Models
- Lecture 73 - Elementary Modes
- Lecture 74 - Elementary Modes
- Lecture 75 - Constraint-based Modelling of Metabolic Networks
- Lecture 76 - Constraint-based Modelling of Metabolic Networks
- Lecture 77 - Constraint-based Modelling of Metabolic Networks
- Lecture 78 - Lab
- Lecture 79 - Constraint-based Modelling of Metabolic Networks
- Lecture 80 - Constraint-based Modelling of Metabolic Networks
- Lecture 81 - Constraint-based Modelling of Metabolic Networks
- Lecture 82 -  $^{13}\text{C}$ -Metabolic Flux Analysis using Mass Spectrometry
- Lecture 83 -  $^{13}\text{C}$ -Metabolic Flux Analysis using Mass Spectrometry
- Lecture 84 -  $^{13}\text{C}$ -Metabolic Flux Analysis using Mass Spectrometry
- Lecture 85 - Lab
- Lecture 86 - Modelling Gene Regulatory Networks
- Lecture 87 - Modelling Gene Regulatory Networks
- Lecture 88 - Modelling Gene Regulatory Networks
- Lecture 89 - Lab
- Lecture 90 - Lab
- Lecture 91 - Computational Modelling of Host-Pathogen Interactions
- Lecture 92 - Computational Modelling of Host-Pathogen Interactions
- Lecture 93 - Robustness in Biological Systems
- Lecture 94 - Robustness in Biological Systems
- Lecture 95 - Robustness in Biological Systems
- Lecture 96 - Robustness in Biological Systems
- Lecture 97 - Robustness and Evolvability
- Lecture 98 - Robustness and Evolvability
- Lecture 99 - Introduction to Synthetic Biology
- Lecture 100 - Advanced Topics
- Lecture 101 - Advanced Topics
- Lecture 102 - Advanced Topics
- Lecture 103 - Course Recap

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

NPTEL Video Course - Biotechnology - NOC:Material and Energy Balances

Subject Co-ordinator - Prof.Vignesh Muthuvijayan

Co-ordinating Institute - IIT - Madras

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

Lecture 1 - Fundamentals of Engineering Calculations

Lecture 2 - Process Parameters and Variables

Lecture 3 - Fundamentals of Material Balances

Lecture 4 - Material Balance Calculations for Single Units Without Reactions - Part 1

Lecture 5 - Material Balance Calculations for Single Units Without Reactions - Part 2

Lecture 6 - Material Balance Calculations for Single Units Without Reactions - Part 3

Lecture 7 - Material Balance Calculations for Single Units Without Reactions - Part 4

Lecture 8 - Material Balance Calculations for Multiple Units Without Reactions - Part 1

Lecture 9 - Material Balance Calculations for Multiple Units Without Reactions - Part 2

Lecture 10 - Fundamentals of Reactive Processes

Lecture 11 - Material Balance Calculations For Single Units With A Single Reaction

Lecture 12 - Material Balance Calculations for Single Units with A Single Reaction (Continued...)

Lecture 13 - Material Balance Calculations for Single Units with Multiple Reactions - Part 1

Lecture 14 - Material Balance Calculations for Single Units with Multiple Reactions - Part 2

Lecture 15 - Material Balance Calculations for Single Units with Multiple Reactions - Part 3

Lecture 16 - Material Balance Calculations for Multiple Units with Reactions - Part 1

Lecture 17 - Material Balance Calculations for Multiple Units with Reactions - Part 2

Lecture 18 - Material Balances on Reactive Processes - Tutorials

Lecture 19 - Combustion Reactions

Lecture 20 - Material Balances for Combustion Reactions

Lecture 21 - Biochemical Reactions

Lecture 22 - Biochemical Reactions

Lecture 23 - Recycle Without Reactions

Lecture 24 - Recycle with Reactions

Lecture 25 - Recycle

Lecture 26 - Bypass

Lecture 27 - Purge

Lecture 28 - Material Balance

Lecture 29 - Material Balance

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

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- Lecture 30 - Material Balance
- Lecture 31 - The Unreasonable Effectiveness of Material Balance
- Lecture 32 - Constraint-based modelling
- Lecture 33 - Flux balance analysis - Part 1
- Lecture 34 - Flux balance analysis - Part 2
- Lecture 35 - Energy Balance Terminologies and Concepts
- Lecture 36 - Introduction to Energy Balances - Part 1
- Lecture 37 - Introduction to Energy Balances - Part 2
- Lecture 38 - Introduction to Energy Balances
- Lecture 39 - Mechanical Energy Balances
- Lecture 40 - Mechanical Energy Balances
- Lecture 41 - Energy Balance Objectives and Procedures
- Lecture 42 - Introduction to Nonreactive Processes Without Phase Change
- Lecture 43 - Energy Balances on Single-Phase Nonreactive Processes
- Lecture 44 - Energy Balances on Single-Phase Nonreactive Processes
- Lecture 45 - Fundamentals of Nonreactive Phase Change Processes
- Lecture 46 - Estimating Latent Heats
- Lecture 47 - Energy Balances on Nonreactive Processes With Phase Change
- Lecture 48 - Energy Balances on Nonreactive Processes With Phase Change
- Lecture 49 - Energy Balances on Nonreactive Processes With Phase Change
- Lecture 50 - Psychrometric Charts
- Lecture 51 - Energy Balances Using Psychrometric Charts
- Lecture 52 - Mixing and Solution
- Lecture 53 - Mixing and Solution
- Lecture 54 - Mixing and Solution
- Lecture 55 - Fundamentals for Energy Balances on Reactive Processes - Part 1
- Lecture 56 - Fundamentals for Energy Balances on Reactive Processes - Part 1 and Part 2
- Lecture 57 - Fundamentals for Energy Balances on Reactive Processes - Tutorials
- Lecture 58 - Energy Balances on Reactive Processes - Part 1
- Lecture 59 - Energy Balances on Reactive Processes - Part 2
- Lecture 60 - Energy Balances on Reactive Processes - Part 3
- Lecture 61 - Energy Balances on Reactive Processes - Part 4
- Lecture 62 - Energy Balances on Reactive Processes - Part 5
- Lecture 63 - Energy Balances on Reactive Processes - Part 6
- Lecture 64 - Energy Balances
- Lecture 65 - Energy Balances
- Lecture 66 - Energy Balances
- Lecture 67 - Energy Balances
- Lecture 68 - Unsteady State Material Balances

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

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Lecture 69 - Unsteady State Energy Balances

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

NPTEL Video Course - Biotechnology - NOC:Computer Aided Drug Design

Subject Co-ordinator - Prof. Mukesh Doble

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Introduction
- Lecture 2 - Drug Discovery - Issues
- Lecture 3 - Target and Lead Identification
- Lecture 4 - Drug And Data bases
- Lecture 5 - Drug Properties
- Lecture 6 - Drug - Properties / SMILES
- Lecture 7 - Drug Solubility
- Lecture 8 - Drug Solubility / permeability
- Lecture 9 - ADME
- Lecture 10 - Drug - ADME
- Lecture 11 - Drug - ADME
- Lecture 12 - Drug - BBB
- Lecture 13 - Pgp efflux/Drug Likeness
- Lecture 14 - Drug Likeness
- Lecture 15 - Molecular Modelling
- Lecture 16 - Molecular Mechanics / Force Field
- Lecture 17 - Molecular Mechanics / Force Field
- Lecture 18 - Molecular Mechanics / Force Field
- Lecture 19 - Molecular Mechanics / Force Field
- Lecture 20 - ODES and Numerical methods
- Lecture 21 - ODES and Numerical methods
- Lecture 22 - Conformational Search / MD
- Lecture 23 - Quantum Mechanics
- Lecture 24 - Quantum Mechanics
- Lecture 25 - Quantitative Struture Activity Relationship (QSAR)
- Lecture 26 - Quantitative Struture Activity Relationship (QSAR)
- Lecture 27 - Quantitative Struture Activity Relationship (QSAR)
- Lecture 28 - Quantitative Struture Activity Relationship (QSAR)
- Lecture 29 - Quantitative Struture Activity Relationship (QSAR)

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- Lecture 30 - Quantitative Structure Activity Relationship (QSAR)
- Lecture 31 - 3D QSAR
- Lecture 32 - Pharmacophore modelling
- Lecture 33 - Target based drug design
- Lecture 34 - Target based drug design
- Lecture 35 - Target based drug design
- Lecture 36 - Target based drug design
- Lecture 37 - Docking
- Lecture 38 - Docking
- Lecture 39 - Pharmacokinetics / pharmacodynamics
- Lecture 40 - Pharmacokinetics / pharmacodynamics

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

NPTEL Video Course - Biotechnology - Analytical Technologies in Biotechnology

Subject Co-ordinator - Dr. Ashwani K. Sharma

Co-ordinating Institute - IIT - Roorkee

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

- Lecture 1 - Basic concepts in microscopy - 1
- Lecture 2 - Basic concepts in microscopy - 2
- Lecture 3 - Dark-field and phase contrast microscopy
- Lecture 4 - Differential interference contrast and polarization
- Lecture 5 - Fluorescence and confocal microscopy
- Lecture 6 - Transmission electron microscopy
- Lecture 7 - Transmission electron microscopy cont. and scanning electron microscopy
- Lecture 8 - Basic concepts - 1
- Lecture 9 - Basic concepts - 2
- Lecture 10 - GM counting and Scintillation counting
- Lecture 11 - Scintillation counting continued
- Lecture 12 - Autoradiography and RIA
- Lecture 13 - Safety aspects and applications
- Lecture 14 - Introduction and Basic concepts in chromatography - 1
- Lecture 15 - Basic concepts in chromatography - 2
- Lecture 16 - Low-pressure liquid chromatography (LPLC) and high performance liquid chromatography (HPLC)
- Lecture 17 - Ion-exchange chromatography
- Lecture 18 - Gel-filtration chromatography
- Lecture 19 - Affinity chromatography
- Lecture 20 - Gas-liquid chromatography
- Lecture 21 - Basic concepts in electrophoresis
- Lecture 22 - Horizontal and vertical gel electrophoresis
- Lecture 23 - Native gel electrophoresis and SDS-PAGE
- Lecture 24 - Isoelectric focusing (IEF), 2-D gel electrophoresis and protein detection methods
- Lecture 25 - Electrophoresis of nucleic acids
- Lecture 26 - Immunoelectrophoresis and capillary electrophoresis
- Lecture 27 - Introduction and Basic Concepts - 1
- Lecture 28 - Basic concepts - 2
- Lecture 29 - Types of centrifuges and analytical ultracentrifugation method

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- Lecture 30 - Separation methods in preparative ultracentrifuges
- Lecture 31 - Types of rotors
- Lecture 32 - Types of rotors cont. and care of rotors
- Lecture 33 - Introduction and basic concepts
- Lecture 34 - UV-Visible spectroscopy
- Lecture 35 - Infrared and fluorescence spectroscopy
- Lecture 36 - Circular dichroism (CD) spectroscopy
- Lecture 37 - Nuclear magnetic resonance (NMR) spectroscopy and X-ray crystallography
- Lecture 38 - Atomic spectroscopy and mass spectrometry
- Lecture 39 - Polymerase chain reaction(PCR)
- Lecture 40 - DNA sequencing methods
- Lecture 41 - Enzyme linked immunosorbent assay (ELISA)

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

NPTEL Video Course - Biotechnology - NOC:Biomedical Nanotechnology

Subject Co-ordinator - Prof. P.Gopinath

Co-ordinating Institute - IIT - Roorkee

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

Lecture 1 - Introduction to Nano

Lecture 2 - Nano-Biomimicry

Lecture 3 - Synthesis of nanomaterials by Physical and Chemical Methods

Lecture 4 - Synthesis of nanomaterials by Biological Methods

Lecture 5 - Characterisation of Nanomaterials

Lecture 6 - DNA Nanotechnology

Lecture 7 - Protein and Glyco Nanotechnology

Lecture 8 - Lipid Nanotechnology

Lecture 9 - Bio-Nanomachines

Lecture 10 - Carbon nanotubes and Its Bio-Applications

Lecture 11 - Nanomaterials for Cancer Diagnosis

Lecture 12 - Nanomaterials for Cancer therapy

Lecture 13 - Nanotechnology in Tissue Engineering

Lecture 14 - Nano artificial cells

Lecture 15 - Nanotechnology in Organ Printing

Lecture 16 - Nanotechnology in Point-of-Care Diagnostics

Lecture 17 - Nano-Pharmacology and Drug Targeting

Lecture 18 - Cellular uptake mechanisms of nanomaterials

Lecture 19 - In vitro Methods to study antibacterial and anticancer properties of nanomaterials

Lecture 20 - Nanotoxicology

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

NPTEL Video Course - Biotechnology - NOC:Learning about Learning: A Course on Neurobiology of Learning and Me

Subject Co-ordinator - Prof. Balaji Jayaprakash

Co-ordinating Institute - IISc - Bangalore

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

Lecture 1 - Introduction to Learning and Memory - I

Lecture 2 - Introduction to Learning and Memory - II

Lecture 3 - Associative Learning I

Lecture 4 - Associative learning II

Lecture 5 - Introduction to the Rescorla Wagner Model

Lecture 6 - Application of Rescorla Wagner Model - I

Lecture 7 - Application of Rescorla Wagner Model - II

Lecture 8 - Application of Rescorla Wagner Model - III

Lecture 9 - Application of Rescorla Wagner Model - IV

Lecture 10 - Limitations of Rescorla Wagner Model

Lecture 11 - Introduction of Reinforcement Learning - I

Lecture 12 - Introduction of Reinforcement Learning - II

Lecture 13 - Introduction of Reinforcement Learning - III

Lecture 14 - Sign Tracking vs Goal Oriented/Tracking; Linking complex behaviors to simple molecules

Lecture 15 - Sign Tracking vs Goal Oriented; Learning Linking complex behaviors to simple molecules - II

Lecture 16 - Memory in Molecular Terms - I

Lecture 17 - Memory in Molecular Terms - II

Lecture 18 - Memory in Molecular Terms - III

Lecture 19 - Memory in Molecular Terms - IV

Lecture 20 - Memory in Molecular Terms - V

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