

# 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  
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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 - 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 - 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  
Lecture 10 - Animal Physiology  
Lecture 11 - Animal Physiology  
Lecture 12 - Animal Physiology  
Lecture 13 - Animal Physiology  
Lecture 14 - Animal Physiology  
Lecture 15 - Animal Physiology  
Lecture 16 - Animal Physiology  
Lecture 17 - Animal Physiology  
Lecture 18 - Animal Physiology  
Lecture 19 - Animal Physiology  
Lecture 20 - Animal Physiology  
Lecture 21 - Animal Physiology  
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 - 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 - 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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- 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 - 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)