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

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

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

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 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 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

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 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 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 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 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 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 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 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 30 - Clinicianâ 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 Course - Biotechnology - NOC:Applications of Interactomics using Genomics and Proteomics Technolo

Subject Co-ordinator - Prof. Sanjeeva Srivastava

Co-ordinating Institute - IIT - Bombay

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

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 TorrentÃ¢
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 Course - Biotechnology - NOC:Introduction to Proteogenomics

Subject Co-ordinator - Prof. Sanjeeva Srivastava

Co-ordinating Institute - IIT - Bombay

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

Lecture 30 - Hypothesis testing
Lecture 31 - ProTIGY - I
Lecture 32 - ProTIGY - II
Lecture 33 - Proteomics Data Analysis
Lecture 34 - Proteomics Lab Demonstration - I
Lecture 35 - Proteomics Lab Demonstration - II
Lecture 36 - Workflow to Automated Data Processing
Lecture 37 - Introduction to Fire Cloud
Lecture 38 - FireCloud and Data Model
Lecture 39 - Bioinformatics solutions for Big Data Analysis - I
Lecture 40 - Bioinformatics solutions for Big Data Analysis - II
Lecture 41 - Introduction to Targeted Proteomics
Lecture 42 - Data analysis using Skyline
Lecture 43 - Large-scale data Science - I
Lecture 44 - Large-scale data Science - II
Lecture 45 - Large-scale data Science - III
Lecture 46 - DIA-SWATH Atlas - I
Lecture 47 - DIA-SWATH Atlas - II
Lecture 48 - Prediction Analysis
Lecture 49 - Pathway Enrichment and Network Analysis
Lecture 50 - Human Protein Atlas - I
Lecture 51 - Human Protein Atlas - II
Lecture 52 - Affinity based proteomics & HPA
Lecture 53 - Clinical Considerations for OMICS - I
Lecture 54 - Clinical Considerations for OMICS - II
Lecture 55 - Topics in Proteogenomics
Lecture 56 - Integrative Genomics Viewer (IGV)
Lecture 57 - Introduction to Proteogenomics - I
Lecture 58 - Introduction to Proteogenomics - II
Lecture 59 - Sequence centric proteogenomics
Lecture 60 - Variant Analysis
Lecture 61 - Proteomics - Clinical Applications
Lecture 62 - Perspectives in Proteogenomics - II
Lecture 63 - Predictive Analysis - I
Lecture 64 - Predictive Analysis - II
Lecture 65 - Association/ Marker Selection
Lecture 66 - WebGestalt - I
Lecture 67 - WebGestalt - II
Lecture 68 - Perspectives in Proteogenomics - III

Lecture 69 - Network Analysis - I
Lecture 70 - Network Analysis - II
Lecture 71 - Mutations and Signaling - I
Lecture 72 - Mutations and Signaling - II
Lecture 73 - Pathway Enrichment - I
Lecture 74 - Perspectives in Proteogenomics - IV
Lecture 75 - Pathway Enrichment - II
Lecture 76 - Sequence - GSEA
Lecture 77 - Linked Omics - I
Lecture 78 - Linked Omics - II
Lecture 79 - Proteogenomics - Opportunities and Challenges
Lecture 80 - Perspectives in Proteogenomics - V

NPTEL Video Course - Biotechnology - NOC:Interactomics: Basics and Applications

Subject Co-ordinator - Prof. Sanjeeva Srivastava

Co-ordinating Institute - IIT - Bombay

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

Lecture 30 - Surface Plasmon Resonance - Principles and Assays - II
Lecture 31 - Basics of SPR
Lecture 32 - Basics of SPR
Lecture 33 - Protein immobilization for protein-protein interaction studies
Lecture 34 - Protein-protein interaction study
Lecture 35 - Protein-protein interaction study
Lecture 36 - Use of SPR in unravelling domain motif interactions of proteasomal assembly chaperones
Lecture 37 - Protein-small molecule interaction study
Lecture 38 - Protein-small molecule interaction study
Lecture 39 - An introduction to biolayer interferometry (BLI)and its applications in protein research
Lecture 40 - Biomolecular interactions using Bio-Layer Interferometry (BLI) - I
Lecture 41 - Biomolecular interactions using Bio-Layer Interferometry (BLI) - II
Lecture 42 - Lab session- An introduction to BioLayer Interferometry (BLI) and its applications in protein re
Lecture 43 - Applications of label-free technologies - II
Lecture 44 - Biomolecular interaction analytics using MicroScale Thermophoresis
Lecture 45 - Mass Spectrometry coupled Interactomics - I
Lecture 46 - Mass Spectrometry coupled Interactomics - II
Lecture 47 - Next-Generation Sequencing Technology - Ion Torrent
Lecture 48 - NGS Technology - Bioinformatics and data analysis - I
Lecture 49 - NGS Technology - Bioinformatics and data analysis - II
Lecture 50 - Next-Generation Sequencing Technology- Illumina
Lecture 51 - Agilent complete NGS target enrichment workflow for exomes, targeted panels and beyond
Lecture 52 - The Human Pathology Atlas
Lecture 53 - The Human Pathology Atlas
Lecture 54 - Statistical Analysis - I
Lecture 55 - Statistical Analysis - II
Lecture 56 - Secondary Data Analysis
Lecture 57 - Pathway Enrichment and Network Analysis
Lecture 58 - Data Repositories and Databases
Lecture 59 - Application of multi-omics approach for better understanding of cancers
Lecture 60 - Integrated Omics and Systems Biology- Conclusion

NPTEL Video Course - Biotechnology - NOC:Maternal Infant Young Child Nutrition

Subject Co-ordinator - Prof. Rupal Dalal

Co-ordinating Institute - IIT - Bombay

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

Lecture 30
Lecture 31
Lecture 32
Lecture 33
Lecture 34
Lecture 35
Lecture 36
Lecture 37
Lecture 38
Lecture 39
Lecture 40
Lecture 41
Lecture 42
Lecture 43
Lecture 44
Lecture 45
Lecture 46
Lecture 47
Lecture 48
Lecture 49
Lecture 50
Lecture 51
Lecture 52
Lecture 53
Lecture 54
Lecture 55
Lecture 56
Lecture 57
Lecture 58
Lecture 59
Lecture 60
Lecture 61

NPTEL Video Course - Biotechnology - NOC:Maternal Infant Young Child Nutrition (Hindi)

Subject Co-ordinator - Prof. Rupal Dalal

Co-ordinating Institute - IIT - Bombay

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

Lecture 30 - à¤¦à¥ à¤¸à¤°à¤¾ à¤²à¥ à¤ à¥•à¤ à¤° : à¤¸à¥•à¤¤à¤¨ à¤ à¥ à¤ªà¤ à¤¡à¤¼à¤¨à¤¾ à¤ à¤° à¤¬à¤ à¥•à¤ à
Lecture 31 - à¤¤à¥ à¤¸à¤°à¤¾ à¤²à¥ à¤ à¥•à¤ à¤° : à¤ à¤¨à¥•à¤¯ à¤ªà¤°à¤¾à¤®à¤°à¥•à¤¶ à¤¬à¤¿à¤ à¤¦à¥•
Lecture 32 - à¤ à¥ à¤¥à¤¾ à¤²à¥ à¤ à¥•à¤ à¤° : à¤ à¥•à¤°à¥ à¤¸ à¤ à¥•à¤°à¥ à¤¡à¤² à¤¸à¥•à¤¥à¤¿à¤¤à¤¿ à¤ à¤° à
Lecture 33 - à¤ªà¤¾à¤ à¤ à¤µà¤¾ à¤²à¥ à¤ à¥•à¤ à¤°: à¤ à¥•à¤°à¥ à¤¸ à¤ à¥•à¤°à¥ à¤¡à¤² à¤¸à¥•à¤¥à¤¿à¤¤à¤¿ à¤®
Lecture 34 - à¤ à¤ à¤¾ à¤²à¥ à¤ à¥•à¤ à¤° : à¤¸à¥•à¤¥à¤¿à¤¤à¤¿ à¤ à¤° à¤ à¤¹à¤°à¥ à¤ à¥•à¤¡à¤¼à¤¾à¤µ à¤ à¥
Lecture 35 - à¤ªà¤¹à¤²à¤¾ à¤²à¥ à¤ à¥•à¤ à¤°-à¤ : à¤¸à¥•à¤¤à¤¨à¤ªà¤¾à¤¨ à¤ à¥ à¤²à¤¿à¤• à¤«à¥•à¤ à¤¬à¥ à¤²
Lecture 36 - à¤¦à¥ à¤¸à¤°à¤¾ à¤²à¥ à¤ à¥•à¤ à¤°-à¤ : à¤•à¤ à¤¤à¤°à¤« à¤²à¥ à¤ à¤ à¤° à¤¸à¥•à¤¤à¤¨à¤ªà¤¾à¤
Lecture 37 - à¤¤à¥ à¤¸à¤°à¤¾ à¤²à¥ à¤ à¥•à¤ à¤°-à¤ : à¤¸à¥•à¤¤à¤¨à¤ªà¤¾à¤¨ à¤ à¤¾à¤°à¤ à¥ à¤ à¤ à¤° à¤ à¤¨à
Lecture 38 - à¤ à¥ à¤¥à¤¾ à¤²à¥ à¤ à¥•à¤ à¤° : à¤ à¥ à¤µà¤¿à¤¡ - 19 à¤ à¥ à¤¦à¥ à¤°à¤¾à¤¨ à¤¸à¥•à¤¤à¤¨à¤ªà¤¾
Lecture 39 - à¤ªà¤¾à¤ à¤ à¤µà¤¾ à¤²à¥ à¤ à¥•à¤ à¤°-à¤ : à¤¹à¤¾à¤¥ à¤¸à¥ à¤¸à¥•à¤¤à¤¨ à¤ à¤¾ à¤¦à¥ à¤§ à¤¨à
Lecture 40 - à¤ à¤ à¤¾ à¤²à¥ à¤ à¥•à¤ à¤°-à¤ : à¤¸à¥•à¤¤à¤¨à¤ªà¤¾à¤¨ à¤ à¤°à¤¾à¤¤à¥ à¤®à¤¾à¤ à¤ à¤ à¥ à¤
Lecture 41 - à¤ªà¤¹à¤²à¤¾ à¤²à¥ à¤ à¥•à¤ à¤°-à¤ : 6 à¤¸à¥ 24 à¤®à¤¹à¥ à¤¨à¥ à¤ à¥ à¤¶à¤¿à¤¶à¥•à¤ à¤ à¤ à
Lecture 42 - à¤¦à¥ à¤¸à¤°à¤¾ à¤²à¥ à¤ à¥•à¤ à¤°-à¤ : à¤¶à¤¿à¤¶à¥• à¤ à¤¾ à¤ à¤¾à¤¨à¤¾ à¤¬à¤¨à¤¾à¤¨à¥ à¤ à¤°
Lecture 43 - à¤¤à¥ à¤¸à¤°à¤¾ à¤²à¥ à¤ à¥•à¤ à¤°-à¤ : 6 à¤®à¤¹à¥ à¤¨à¥ à¤ à¥ à¤¬à¤ à¥•à¤ à¥ à¤ à¤ à¥ à¤²à
Lecture 44 - à¤ à¥ à¤¥à¤¾ à¤²à¥ à¤ à¥•à¤ à¤°-à¤ : 7 à¤®à¤¹à¥ à¤¨à¥ à¤ à¥ à¤¬à¤ à¥•à¤ à¥ à¤ à¤ à¥ à¤²à¤¿à
Lecture 45 - à¤ªà¤¾à¤ à¤ à¤µà¤¾ à¤²à¥ à¤ à¥•à¤ à¤°-à¤ : 8 à¤¸à¥ 11 à¤®à¤¹à¥ à¤¨à¥ à¤ à¥ à¤¬à¤ à¥•à¤ à¥ à
Lecture 46 - à¤ªà¤¹à¤²à¤¾ à¤²à¥ à¤ à¥•à¤ à¤° : à¤ªà¥ à¤°à¤ à¤ à¤¹à¤¾à¤° à¤ à¥ à¤¦à¥ à¤°à¤¾à¤¨ à¤¹à¥ à¤¨à¥
Lecture 47 - à¤¦à¥ à¤¸à¤°à¤¾ à¤²à¥ à¤ à¥•à¤ à¤° : 12 à¤¸à¥ 18 à¤®à¤¹à¥ à¤¨à¥ à¤ à¥ à¤¬à¤ à¥•à¤ à¥ à¤ à¤ à
Lecture 48 - à¤¤à¥ à¤¸à¤°à¤¾ à¤²à¥ à¤ à¥•à¤ à¤° : 19 à¤¸à¥ 24 à¤®à¤¹à¥ à¤¨à¥ à¤ à¥ à¤¬à¤ à¥•à¤ à¥ à¤ à¤ à
Lecture 49 - à¤ à¥ à¤¥à¤¾ à¤²à¥ à¤ à¥•à¤ à¤° : à¤¬à¤ à¥•à¤ à¥ à¤ à¤ à¥ à¤ªà¤¾à¤°à¥•à¤ à¤¿à¤¯à¥ à¤ à¤ à¥ à
Lecture 50 - à¤ªà¤¹à¤²à¤¾ à¤²à¥ à¤ à¥•à¤ à¤° : à¤ à¤¿à¤¶à¥ à¤°à¥ à¤ à¤ à¥ à¤²à¤¿à¤• à¤¶à¤¾à¤ à¤¾à¤¹à¤¾à¤°à¥
Lecture 51 - à¤¦à¥ à¤¸à¤°à¤¾ à¤²à¥ à¤ à¥•à¤ à¤° : à¤ à¤°à¥•à¤à¤µà¤¤à¤¿à¤¯à¥ à¤ à¤ à¥ à¤²à¤¿à¤• à¤ªà¥ à¤·à¥
Lecture 52 - à¤¤à¥ à¤¸à¤°à¤¾ à¤²à¥ à¤ à¥•à¤ à¤° : à¤¸à¥•à¤¤à¤¨à¤ªà¤¾à¤¨ à¤ à¤°à¤¾à¤¨à¥ à¤µà¤¾à¤²à¥ à¤®à¤¾à
Lecture 53 - à¤ªà¤¹à¤²à¤¾ à¤²à¥ à¤ à¥•à¤ à¤° : à¤¡à¤¬à¤²à¥•à¤²à¥•à¤¯à¥ à¤•à¤ à¤ à¤¬à¤¹à¥•à¤ à¤¥ à¤ à¤¦à¥•à¤°à¥ à
Lecture 54 - à¤¦à¥ à¤¸à¤°à¤¾ à¤²à¥ à¤ à¥•à¤ à¤° : à¤®à¤¾à¤¨à¤ à¤¸à¤¾à¤®à¤¾à¤¨à¥•à¤¯ à¤µà¤¿à¤ à¤²à¤¨| à¤¡à¤¬à
Lecture 55 - à¤¤à¥ à¤¸à¤°à¤¾ à¤²à¥ à¤ à¥•à¤ à¤°:à¤¡à¤¬à¥•à¤²à¥•à¤¯à¥ à¤•à¤ à¤ -à¤ à¤®à¥•à¤°à¥ à¤ à¥ à¤¹à¤¿à¤¸
Lecture 56 - à¤ à¥ à¤¥à¤¾ à¤²à¥ à¤ à¥•à¤ à¤° : à¤•à¤ à¤¥à¥•à¤°à¥ à¤ªà¥ à¤®à¥ à¤ à¥•à¤°à¤¿à¤ à¤®à¤¾à¤ª
Lecture 57 - à¤ªà¤¹à¤²à¤¾ à¤²à¥ à¤ à¥•à¤ à¤° : à¤¸à¥•à¤¤à¤¨à¤ªà¤¾à¤¨ à¤ à¥ à¤²à¤¿à¤• à¥ªà¥« à¤ªà¤°à¤¾à¤®à¤°à
Lecture 58 - à¤¦à¥ à¤¸à¤°à¤¾ à¤²à¥ à¤ à¥•à¤ à¤° : à¤¸à¥•à¤¤à¤¨à¤ªà¤¾à¤¨ à¤ à¥ à¤²à¤¿à¤• à¥ªà¥« à¤ªà¤°à¤¾à¤®à
Lecture 59 - à¤¤à¥ à¤¸à¤°à¤¾ à¤²à¥ à¤ à¥•à¤ à¤° : à¤ªà¥ à¤·à¤£ à¤ à¤¾à¤°à¥•à¤
Lecture 60 - à¤ à¥ à¤¥à¤¾ à¤²à¥ à¤ à¥•à¤ à¤° : à¤²à¤°à¥•à¤¨à¤¿à¤ à¤ à¤•à¤ à¥•à¤¶à¤¨ à¤ªà¥•à¤°à¥ à¤ à¥ à¤ à¥
Lecture 61 - à¤ªà¤¾à¤ à¤ à¤µà¤¾ à¤²à¥ à¤ à¥•à¤ à¤° : à¤²à¤°à¥•à¤¨à¤¿à¤ à¤ à¤•à¤ à¥•à¤¶à¤¨ à¤ªà¥•à¤°à¥ à¤ à¥
Lecture 62 - à¤ à¤ à¤¾ à¤²à¥ à¤ à¥•à¤ à¤° : à¤®à¤¾à¤¤à¥ , à¤¶à¤¿à¤¶à¥• à¤ à¤° à¤¬à¤¾à¤² à¤ªà¥ à¤·à¤£ à¤ à¥ à

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

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

NPTEL Video Course - Biotechnology - NOC:Genetic Engineering: Theory and Application

Subject Co-ordinator - Dr. Vishal Trivedi

Co-ordinating Institute - IIT - Guwahati

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

Lecture 30 - Affinity Chromatography - Part 4
Lecture 31 - Electrophoresis - Part 1
Lecture 32 - Electrophoresis - Part 2
Lecture 33 - Electrophoresis - Part 3
Lecture 34 - Protein Sequencing
Lecture 35 - Spectroscopy - Part I
Lecture 36 - Spectroscopy - Part II
Lecture 37 - Biotechnology Applications - Part 1
Lecture 38 - Biotechnology Applications - Part 2
Lecture 39 - Biotechnology Applications - Part 3
Lecture 40 - Summary and Conclusions - Part 1
Lecture 41 - Summary and Conclusions - Part 2

NPTEL Video Course - Biotechnology - NOC:Experimental Biotechnology

Subject Co-ordinator - Dr. Vishal Trivedi

Co-ordinating Institute - IIT - Guwahati

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

Lecture 30 - Antibody-Antigen Interaction - Part 2
Lecture 31 - Antibody-Antigen Interaction - Part 3
Lecture 32 - Cell Culture Medium
Lecture 33 - Cell Fractionation
Lecture 34 - Microscopy - Part 1
Lecture 35 - Microscopy - Part 2
Lecture 36 - Cell Biology Experiments
Lecture 37 - Flow Cytometry
Lecture 38 - Polymerase Chain Reaction - Part 1
Lecture 39 - Polymerase Chain Reaction - Part 2
Lecture 40 - Polymerase Chain Reaction - Part 3
Lecture 41 - Polymerase Chain Reaction - Part 4
Lecture 42 - Sequencing Techniques
Lecture 43 - Blotting Techniques - Part 1
Lecture 44 - Blotting Techniques - Part 2
Lecture 45 - Designing Experiments

NPTEL Video Course - Biotechnology - NOC:Biointerface Engineering

Subject Co-ordinator - Prof. Lalit M. Pandey

Co-ordinating Institute - IIT - Guwahati

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

NPTEL Video Course - Biotechnology - NOC:Basics of Biology

Subject Co-ordinator - Prof. Vishal Trivedi

Co-ordinating Institute - IIT - Guwahati

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

NPTEL Video Course - Biotechnology - NOC:Data Analysis for Biologists

Subject Co-ordinator - Prof. Biplab Bose

Co-ordinating Institute - IIT - Guwahati

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

Lecture 30 - Multiple linear regression
Lecture 31 - Multiple linear regression using R
Lecture 32 - Nonlinear regression
Lecture 33 - Nonlinear regression using R
Lecture 34 - Clustering and classification
Lecture 35 - Logistic regression
Lecture 36 - Logistic regression using R
Lecture 37 - Distance mesaures for clustering
Lecture 38 - k-means clustering
Lecture 39 - k-means clustering using R
Lecture 40 - Hierarchical clustering
Lecture 41 - Hierarchical clustering using R
Lecture 42 - Decision tree classifier
Lecture 43 - Support vector machines
Lecture 44 - Higher-dimensional data in biology
Lecture 45 - Principle component analysis
Lecture 46 - Principle component analysis using R
Lecture 47 - t-SNE
Lecture 48 - t-SNE using R
Lecture 49 - Diffusion maps

NPTEL Video Course - Biotechnology - NOC:Genome Editing and Engineering

Subject Co-ordinator - Prof. Utpal Bora

Co-ordinating Institute - IIT - Guwahati

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

NPTEL Video Course - Biotechnology - NOC:Enzyme Sciences and Technology

Subject Co-ordinator - Prof. Vishal Trivedi

Co-ordinating Institute - IIT - Guwahati

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

Lecture 30 - Amino acid Metabolism and Detoxification
Lecture 31 - Enzyme-Substrate Interactions - Part I - Chromatographic Methods
Lecture 32 - Enzyme-Substrate Interactions - Part II - Spectroscopic Methods
Lecture 33 - Enzyme-Substrate Interactions - Part III - ITC
Lecture 34 - Enzyme-Substrate Interactions - Part IV - SPR
Lecture 35 - Enzyme Assay System - Part I
Lecture 36 - Enzyme Assay System - Part II
Lecture 37 - Enzyme Assay System - Part III
Lecture 38 - Enzyme Kinetics
Lecture 39 - Inhibitor Designing - Part I - Traditional Approach
Lecture 40 - Inhibitor Designing - Part II - Modern Approach
Lecture 41 - Inhibitor Designing - Part III - Computational Approach
Lecture 42 - Enzyme Inhibition - Part I
Lecture 43 - Enzyme Inhibition - Part II
Lecture 44 - Application of Enzyme - Part I - Food Industry
Lecture 45 - Application of Enzyme - Part II - Medical Field
Lecture 46 - Enzyme in Drug Discovery
Lecture 47 - Enzymes in Environmental Field

NPTEL Video Course - Biotechnology - NOC:Molecular Biology

Subject Co-ordinator - Prof. Vishal Trivedi

Co-ordinating Institute - IIT - Guwahati

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

Lecture 30 - Translation in Prokaryotic system
Lecture 31 - Translation in Eukaryotic System
Lecture 32 - Post Translational modifications
Lecture 33 - Southern Blotting
Lecture 34 - Northern Blotting
Lecture 35 - Western Blotting - Part 1
Lecture 36 - Western Blotting - Part 2
Lecture 37 - Polymerase Chain Reaction - Part 1
Lecture 38 - Polymerase Chain Reaction - Part 2
Lecture 39 - Real-Time PCR
Lecture 40 - Cloning - Part 1
Lecture 41 - Cloning - Part 2
Lecture 42 - Cloning Vectors
Lecture 43 - DNA Delivery - Part 1
Lecture 44 - DNA Delivery - Part 2
Lecture 45 - Screening of Recombinant Clones
Lecture 46 - Protein Over-expression
Lecture 47 - Genome Editing - Part 1
Lecture 48 - Genome Editing - Part 2
Lecture 49 - Applications of Molecular Biology - Part 1
Lecture 50 - Applications of Molecular Biology - Part 2
Lecture 51 - Applications of Molecular Biology - Part 3
Lecture 52 - Applications of Molecular Biology - Part 4

NPTEL Video Course - Biotechnology - NOC:Microbial Biotechnology

Subject Co-ordinator - Prof. Utpal Bora

Co-ordinating Institute - IIT - Guwahati

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

Lecture 30 - Health Benefits, Risks and Advances in Food Fermentation
Lecture 31 - Fermented Beverages: Microbial Processes and Biotechnological Innovations
Lecture 32 - Industrial Fermentation and Health Aspects of Fermented Beverages
Lecture 33 - Single Cell Protein production
Lecture 34 - Production of biopharmaceuticals (Enzymes,antibodies and therapeutic proteins) using rDNA techno
Lecture 35 - Production of vaccines
Lecture 36 - Production of Biofuel using microbes
Lecture 37 - Microbial fuel Cells (MFCs) and microbial electrolysis cells (MECs)
Lecture 38 - Introduction to IPR, biotechnology patents, app. process, legal and ethical considerations
Lecture 39 - Patenting in microbial biotechnology, commercialization and future of microbial patenting

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

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 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 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 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

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

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 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 - Fludized Bed Gasification
Lecture 39 - Operation and Performance of Fluidized Bed Gasifier
Lecture 40 - Biological Root of Gasification and Summary of Course

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 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 arc circuit - I
Lecture 37 - Stretch reflex arc circuit - II
Lecture 38 - Neuro muscular junction
Lecture 39 - Hearing system
Lecture 40 - Olfaction system
Lecture 41 - Anatomy of eye
Lecture 42 - Eye lens and cataract
Lecture 43 - Structure of Retina
Lecture 44 - Image formation and processing in eyes
Lecture 45 - Mechanism of photo processing by rods
Lecture 46 - Structure and Function of Heart - I
Lecture 47 - Structure and Function of Heart - II
Lecture 48 - Conduction circuit of heart
Lecture 49 - Contractile system and Conducting system
Lecture 50 - EKG and Comparison of action potential between pace make cell and work cell
Lecture 51 - Respiratory Physiology
Lecture 52 - Anatomy and physiology of Blood vessels - I
Lecture 53 - Anatomy and Physiology of Blood vessels - II
Lecture 54 - Anatomy and physiology of blood vessels - III
Lecture 55 - Anatomy and physiology of blood vessels - IV
Lecture 56 - Endocrine system - I
Lecture 57 - Digestive system and Endocrine system - II
Lecture 58 - Blood
Lecture 59 - Kidney and immune system
Lecture 60 - Reproductive system

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 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 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 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 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

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

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

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 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 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 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 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 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 Course - Biotechnology - NOC:Forests and their Management

Subject Co-ordinator - Dr. Ankur Awadhiya

Co-ordinating Institute - IIT - Kanpur

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

Lecture 30 - Planting and Tending
Lecture 31 - NTFP
Lecture 32 - Social Forestry and Tribal Welfare
Lecture 33 - Conservation of Wild Animals
Lecture 34 - Revision - Part 1
Lecture 35 - Revision - Part 2
Lecture 36 - Revision - Part 3

NPTEL Video Course - Biotechnology - NOC:Conservation Economics

Subject Co-ordinator - Dr. Ankur Awadhiya

Co-ordinating Institute - IIT - Kanpur

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

NPTEL Video Course - Biotechnology - NOC:Conservation Geography

Subject Co-ordinator - Dr. Ankur Awadhiya

Co-ordinating Institute - IIT - Kanpur

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

NPTEL Video Course - Biotechnology - NOC:Neurobiology

Subject Co-ordinator - Prof. Nitin Gupta

Co-ordinating Institute - IIT - Kanpur

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

Lecture 30 - L5 Module 2
Lecture 31 - L5 Module 3
Lecture 32 - L5 Module 4
Lecture 33 - L5 Module 5
Lecture 34 - L5 Module 6

NPTEL Video Course - Biotechnology - NOC:Design for Biosecurity

Subject Co-ordinator - Prof. Mainak Das

Co-ordinating Institute - IIT - Kanpur

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

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

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 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 - Bakerâ s yeast fermentation
Lecture 44 - Bakerâ 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^3 Pilot Plant operation for Biohydrogen production
Lecture 60 - Summary and conclusion

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 30 - Kinetics of enzyme catalyzed reactions using immobilized enzymes - II
Lecture 31 - Kinetics of substrate utilization, product formation and biomass production of microbial cells -
Lecture 32 - Kinetics of substrate utilization, product formation and biomass production of microbial cells -
Lecture 33 - Kinetics of substrate utilization, product formation and biomass production of microbial cells -
Lecture 34 - Kinetics of substrate utilization, product formation and biomass production of microbial cells -
Lecture 35 - Kinetics of substrate utilization, product formation and biomass production of microbial cells -
Lecture 36 - Kinetics of substrate utilization, product formation and biomass production of microbial cells -
Lecture 37 - Kinetics of substrate utilization, product formation and biomass production of microbial cells -
Lecture 38 - Kinetics of substrate utilization, product formation and biomass production of microbial cells -
Lecture 39 - Kinetics of substrate utilization, product formation and biomass production of microbial cells -
Lecture 40 - Kinetics of substrate utilization, product formation and biomass production of microbial cells -
Lecture 41 - Kinetics of substrate utilization, product formation and biomass production of microbial cells -
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 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

NPTEL Video Course - Biotechnology - NOC:Immunology

Subject Co-ordinator - Prof. Agneyo Ganguly, Prof. S. K Ghosh

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 30 - Flow Cytometry
Lecture 31 - Development of T Lymphocytes
Lecture 32 - Development of T Lymphocytes (Continued...)
Lecture 33 - Development of T Lymphocytes (Continued...)
Lecture 34 - T Cell Mediated Immunity
Lecture 35 - T Cell Mediated Immunity (Continued...)
Lecture 36 - B-Cell Maturation - I
Lecture 37 - B-Cell Maturation - II
Lecture 38 - B-Cell Activation
Lecture 39 - B-Cell Activation and Differentiation
Lecture 40 - Effector T - Cells
Lecture 41 - Complement System Overview
Lecture 42 - Complement System Overview (Continued...)
Lecture 43 - Complement Biological Consequences
Lecture 44 - Complement Biological Consequences (Continued...)
Lecture 45 - Cytokines
Lecture 46 - Cytokines
Lecture 47 - Cytokines in Innate and Adaptive Immunity
Lecture 48 - Interferons
Lecture 49 - Hypersensitivity
Lecture 50 - Hypersensitivity (Continued...)
Lecture 51 - Autoimmunity
Lecture 52 - Autoimmunity (Continued...)
Lecture 53 - Autoimmunity (Continued...)
Lecture 54 - Transplantation or Graft vs. Host Reaction
Lecture 55 - Transplantation or Graft vs. Host Reaction (Continued...)
Lecture 56 - Active and Passive Immunity and Vaccination
Lecture 57 - Active and Passive Immunity and Vaccination (Continued...)
Lecture 58 - Active and Passive Immunity and Vaccination (Continued...)
Lecture 59 - Monoclonal Antibody
Lecture 60 - Monoclonal Antibody (Continued...)

NPTEL Video Course - Biotechnology - NOC:Metabolic Engineering

Subject Co-ordinator - Prof. Amit Ghosh, Prof. Pinaki Sar

Co-ordinating Institute - IIT - Kharagpur

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

NPTEL Video Course - Biotechnology - NOC:Environmental Chemistry and Microbiology

Subject Co-ordinator - Prof. Sudha Goel, Prof. Anjali Pal

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Acids, Bases and Salts - Part I
Lecture 2 - Acids, Bases and Salts - Part II
Lecture 3 - Acids, Bases and Salts - Part III
Lecture 4 - Acids, Bases and Salts - Part IV
Lecture 5 - Acids, Bases and Salts - Part V
Lecture 6 - Chemical Equilibrium - I
Lecture 7 - Chemical Equilibrium - II
Lecture 8 - Chemical Equilibrium - III
Lecture 9 - Chemical Equilibrium - IV
Lecture 10 - Chemical Equilibrium - V
Lecture 11 - Chemical Kinetics - I
Lecture 12 - Chemical Kinetics - II
Lecture 13 - Chemical Kinetics - III
Lecture 14 - Chemical Kinetics - IV
Lecture 15 - Chemical Kinetics - V
Lecture 16 - Chemical Kinetics - Reaction Mechanism - Part A
Lecture 17 - Chemical Kinetics - Reaction Mechanism - Part B
Lecture 18 - Chemical Kinetics - Catalysis - Part A
Lecture 19 - Chemical Kinetics - Catalysis - Part B
Lecture 20 - Chemical Kinetics - Catalysis - Part C
Lecture 21 - Nitrogen chemistry - Part A
Lecture 22 - Nitrogen chemistry - Part B
Lecture 23 - Chlorine chemistry and disinfection - Part A
Lecture 24 - Chlorine chemistry and disinfection - Part B
Lecture 25 - Chlorine chemistry and disinfection - Part C
Lecture 26 - Radioactivity - Part A
Lecture 27 - Radioactivity - Part B
Lecture 28 - Radioactivity - Part C
Lecture 29 - Radioactivity - Part D

Lecture 30 - Radioactivity - Part E
Lecture 31 - Introduction - I
Lecture 32 - Introduction - II
Lecture 33 - Overview of microbial life - I
Lecture 34 - Overview of microbial life - II
Lecture 35 - Overview of microbial life - III
Lecture 36 - Cell chemistry - I
Lecture 37 - Cell chemistry - II
Lecture 38 - Cell Biology - I
Lecture 39 - Cell Biology - II
Lecture 40 - Cell Biology - III
Lecture 41 - Cell Biology - IV
Lecture 42 - Microscopy - I
Lecture 43 - Microscopy - II
Lecture 44 - Microbial Metabolism - I
Lecture 45 - Microbial Metabolism - II
Lecture 46 - Microbial Metabolism - III
Lecture 47 - Xenobiotics - I
Lecture 48 - Xenobiotics - II
Lecture 49 - Microbial Growth - I
Lecture 50 - Microbial Growth - II
Lecture 51 - Microbial Growth - III
Lecture 52 - Microbial Growth and Control - I
Lecture 53 - Microbial Growth and Control - II
Lecture 54 - Pathogens and diseases - I
Lecture 55 - Pathogens and diseases - II
Lecture 56 - Metabolic Diversity - I
Lecture 57 - Metabolic Diversity - II
Lecture 58 - Metabolic Diversity - III
Lecture 59 - Metabolic Diversity - IV
Lecture 60 - Metabolic Diversity - V
Lecture 61 - Metabolic Diversity - VI
Lecture 62 - Biogeochemical cycles - I
Lecture 63 - Biogeochemical cycles - II

NPTEL Video Course - Biotechnology - NOC:Environmental Biotechnology

Subject Co-ordinator - Prof. Pinaki Sar

Co-ordinating Institute - IIT - Kharagpur

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

NPTEL Video Course - Biotechnology - NOC:Fundamentals of Protein Chemistry

Subject Co-ordinator - Prof. Swagata Dasgupta

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 30 - Enzyme mechanisms - III
Lecture 31 - Enzyme Kinetics - I
Lecture 32 - Enzyme Kinetics - II
Lecture 33 - Enzyme Inhibition - I
Lecture 34 - Enzyme Inhibition - II
Lecture 35 - Discussion class
Lecture 36 - Motor Proteins - I
Lecture 37 - Motor Proteins - II
Lecture 38 - Metalloproteins - I
Lecture 39 - Metalloproteins - II
Lecture 40 - Myoglobin and Hemoglobin
Lecture 41 - Membrane Proteins - I
Lecture 42 - Membrane proteins - II
Lecture 43 - Membrane Transport - I
Lecture 44 - Membrane Transport - II
Lecture 45 - Electron Transport Chain
Lecture 46 - Protein Carbohydrate Interactions - I
Lecture 47 - Protein Carbohydrate Interactions - II
Lecture 48 - Protein Nucleic Acid Interactions - I
Lecture 49 - Protein Nucleic Acid Interactions - II
Lecture 50 - Protein Nucleic Acid Interactions - III
Lecture 51 - Protein Protein Interactions - I
Lecture 52 - Protein Protein Interactions - II
Lecture 53 - Protein Peptide Interactions
Lecture 54 - Chaperone proteins
Lecture 55 - Protein Nanoparticle Interactions
Lecture 56 - Oxidative stress in Proteins
Lecture 57 - Enzyme action and Proteolytic cleavage
Lecture 58 - Intrinsically disordered proteins
Lecture 59 - Viral proteins
Lecture 60 - Overview of Course

NPTEL Video Course - Biotechnology - NOC:Introduction to Biomedical Imaging Systems

Subject Co-ordinator - Dr. Arun K.Tangirala

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 30 - Planar_Scintigraphy_Im and IQ
Lecture 31 - Spect_Pet
Lecture 32 - Ultrasound_Intro_Phys
Lecture 33 - Ultrasound Phys_Interactions
Lecture 34 - US doppler and Instrumentation
Lecture 35 - US_Beampattern
Lecture 36 - Approximations
Lecture 37 - US_Imaging Equation_modes
Lecture 38 - Parameters of interest
Lecture 39 - Beam Steering : Phased Array
Lecture 40 - MRI_Intro_S1-S9
Lecture 41 - MRI_Phys_S10-S16
Lecture 42 - MRI_Phys_S17-S20
Lecture 43 - MRI_Phys_S21-S28
Lecture 44 - MRI_Phys_S29-S39
Lecture 45 - MRI_Phys_S40-S44
Lecture 46 - MRI_Phys_S45_S52
Lecture 47 - MRI_Instru_S1_S16
Lecture 48 - MRI_Instru_s17_s26
Lecture 49 - MRI_slice sel_S27_S41
Lecture 50 - MRI_Freq_Encode_S42_S60
Lecture 51 - MRI_DAQ_S61_S69
Lecture 52 - MRI_RECON_S70_S82
Lecture 53 - MRI_IQ_S83_S96

NPTEL Video Course - Biotechnology - NOC:Next Generation Sequencing Technologies: Data Analysis and Applicati

Subject Co-ordinator - Prof. Riddhiman Dhar

Co-ordinating Institute - IIT - Kharagpur

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

NPTEL Video Course - Biotechnology - NOC:Computational Neuroscience

Subject Co-ordinator - Prof. Sharba Bahdyopadhyay

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Neuron Structure
Lecture 2 - Networks of Neurons and Synapses
Lecture 3 - Basic Structures in the Brain
Lecture 4 - Systems of neural processing
Lecture 5 - Methods of Recording Neural Activity
Lecture 6 - Membrane Potential and All or None Spike
Lecture 7 - Patch Clamp Measurements
Lecture 8 - Ion channels
Lecture 9 - Current injection: Synapses
Lecture 10 - Single Neuron Acitivity
Lecture 11 - Point and compartmental models of neurons
Lecture 12 - Hodgkin Huxley Equations - I
Lecture 13 - Hodgkin Huxley Equations - II
Lecture 14 - Reducing the HHE and Moris-Lecar Equations (MLE)
Lecture 15 - Properties of MLE
Lecture 16 - Phase Plane Analysis - I
Lecture 17 - Phase Plane Analysis - II
Lecture 18 - Phase Plane Analysis - III
Lecture 19 - Analysing HHE with Phase Plane Analysis - I
Lecture 20 - Analysing HHE with Phase Plane Analysis - II
Lecture 21 - Random variables and random process
Lecture 22 - Spike train statistics and response measure
Lecture 23 - Receptive fields and models of receptive fields
Lecture 24 - Stimulus to Response mapping (Coding) - I
Lecture 25 - Stimulus to Response mapping (Coding) - II
Lecture 26 - Stimulus to Response Mapping (Coding) - III
Lecture 27 - Response to Stimulus Mapping (Decoding)
Lecture 28 - Basics of Information Theory - I
Lecture 29 - Basics of Information Theory - II

Lecture 30 - Maximally Informative Dimensions
Lecture 31 - Intro to Discrimination based methods
Lecture 32 - Kullback Leibler Distance
Lecture 33 - Measuring Spike Train Distances - I
Lecture 34 - Measuring Spike Train Distances - II
Lecture 35 - Signal and Noise Correlations
Lecture 36 - Statistical Methods in Discrimination
Lecture 37 - Single Cell Decoding - I: Two Alternative Forced Choice task in Monkeys
Lecture 38 - Single Cell Decoding - II: Using ROC Curves for discrimination
Lecture 39 - Single Cell Encoding - I: Operant Conditioning Task in Ferrets
Lecture 40 - Single Cell Encoding - II: Learning in avoidance and approach methods in Ferrets
Lecture 41 - Plasticity - Synaptic Transmission and Synaptic Strength
Lecture 42 - Ways of modification of Synaptic Strength
Lecture 43 - Type of Plasticity
Lecture 44 - Short Term Plasticity - I
Lecture 45 - Short Term Plasticity - II
Lecture 46 - Long Term Plasticity
Lecture 47 - Spike Time Dependent Plasticity
Lecture 48 - Hebbian Plasticity
Lecture 49 - BCM Rule
Lecture 50 - Synaptic Normalization
Lecture 51 - Adaptation
Lecture 52 - Models of Short Term Plasticity
Lecture 53 - Attention - I
Lecture 54 - Attention - II
Lecture 55 - Developmental Cicuits
Lecture 56 - Optimal Coding in Visual System
Lecture 57 - Optimal Coding in Auditory System
Lecture 58 - Optimal Coding of Deviant Stimuli in Development
Lecture 59 - Spike Timing Dependent Plasticity - a theoretical Perspective
Lecture 60 - Important Problems in Neuroscience

NPTEL Video Course - Biotechnology - NOC:Electrophysiology of Heart

Subject Co-ordinator - Dr. Arijita Banerjee

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Ionic basis of membrane potential
Lecture 2 - Physiology of voltage gated channels
Lecture 3 - Physiology of voltage gated channels
Lecture 4 - Cardiac muscle physiology
Lecture 5 - Action potential of cardiac muscle - 1
Lecture 6 - Action potential of cardiac muscle - 2
Lecture 7 - Conducting system of heart
Lecture 8 - ECG-Physiological basis
Lecture 9 - ECG-Normal, Technical aspects
Lecture 10 - ECG Interpretation
Lecture 11 - Abnormal ECG - 1
Lecture 12 - Abnormal ECG - 2
Lecture 13 - ECG and Myocardial Infarction
Lecture 14 - Heart rate and Blood pressure - Baroreflex pathway
Lecture 15 - ECG and Hypertension
Lecture 16 - Autonomic regulation of heart
Lecture 17 - Heart rate variability (HRV)
Lecture 18 - Heart rate variability-interpretation and clinical uses, Blood pressure variability
Lecture 19 - Autonomic Function Tests - 1
Lecture 20 - Autonomic Function Tests - 2

NPTEL Video Course - Biotechnology - NOC:Pharmacognosy and Metabolic Engineering

Subject Co-ordinator - Prof. Adinpunya Mitra

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 30 - Model for biosynthesis and secretion of monoterpenoid indole alkaloids involving
Lecture 31 - Metabolic reprogramming of periwinkle plant culture
Lecture 32 - Engineered yeast brews precursors of anticancer drug vinblastine
Lecture 33 - Recent discovery of strychnine biosynthetic pathway
Lecture 34 - Indole alkaloid biosynthesis - a final overview
Lecture 35 - Recent discovery of colchicine biosynthetic pathway
Lecture 36 - Biosynthesis of terpenoids - an outline
Lecture 37 - Diversity of monoterpenoids
Lecture 38 - Biosynthesis of monoterpenoids
Lecture 39 - Diversity of sesquiterpenes, diterpenes, triterpenes and polyterpenes
Lecture 40 - Oleoresins and polyterpenes - an outline
Lecture 41 - Monoterpenoids as components of floral scent volatiles: Metabolic engineering of
Lecture 42 - Biosynthesis of carotenoids and carotenoid cleavage products
Lecture 43 - Metabolic engineering of carotenoid pathway
Lecture 44 - Metabolic engineering of carotenoid pathway: Golden Rice Story
Lecture 45 - Menthol story: Biosynthesis and pathway manipulation - I
Lecture 46 - Menthol story: Biosynthesis and pathway manipulation - II
Lecture 47 - Artemisinin, hyperforin and taxol - three promising candidates for biotechnological
Lecture 48 - Phenolics: Origin via shikimate pathway
Lecture 49 - Phenolics: Phenylpropanoids, benzenoids, coumarins, tannins
Lecture 50 - Phenolics: Monolignols, lignins and lignans
Lecture 51 - Phenolics: Metabolic engineering of monolignol pathways
Lecture 52 - Phenolics: Biosynthesis of lignans and podophyllotoxin; Caffeic acid esters
Lecture 53 - Phenolics: Flavonoids, Flavones, Isoflavonoids, Proanthocyanidins
Lecture 54 - Phenolics: Biosynthesis of anthocyanins; Metabolic pathway engineering for enhance
Lecture 55 - Phenolics: Metabolic engineering of anthocyanin pathways in flowers
Lecture 56 - Phenolics: Alcohol acetyl transferses and volatile phenolics
Lecture 57 - Phenolics: Biosynthesis of volatile benzenoids
Lecture 58 - Phenolics: Biosynthesis of vanillin in plants
Lecture 59 - Phenolics: Metabolic engineering for vanillin
Lecture 60 - Phenolics: Biosynthesis of shikonin
Lecture 61 - Phenolics: Metabolic engineering of shikonin pathway
Lecture 62 - Molecular Pharming: Transplastomic plants
Lecture 63 - Molecular Pharming: production of human somatotropin in tobacco

NPTEL Video Course - Biotechnology - NOC:Introduction to Complex Biological Systems

Subject Co-ordinator - Prof. Soumya De, Prof. Dibyendu Samanta

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 30 - Introduction to Neuron and the action potential
Lecture 31 - Vitamins and introduction to bioenergetics
Lecture 32 - Glycolysis, Gluconeogenesis and PPP
Lecture 33 - Citric Acid Cycle and Oxidative Phosphorylation
Lecture 34 - Photosynthesis
Lecture 35 - Photosynthetic carbohydrate synthesis
Lecture 36 - Evolution of life on earth
Lecture 37 - Protein evolution
Lecture 38 - Mechanisms of evolution
Lecture 39 - Evolution of eye
Lecture 40 - Model orgamisms
Lecture 41 - Introduction to microbial world and infectious diseases
Lecture 42 - Cell organization and unique features of bacteria
Lecture 43 - Understanding viruses - The smallest enemy
Lecture 44 - Pathogenicity and infection
Lecture 45 - Antibacterial and Antiviral Drugs
Lecture 46 - Introduction to the immune system
Lecture 47 - Innate immunity: the first lines of defense
Lecture 48 - Adaptive immune response
Lecture 49 - Antibody - structure, function and diversity
Lecture 50 - Vaccines and immunotherapy
Lecture 51 - Visualizing and analyzing nucleic acids: Gel electrophoresis and PCR
Lecture 52 - Visualizing and analyzing nucleic acids: DNA Sequencing
Lecture 53 - Overview of genetic engineering and its impact on society
Lecture 54 - Genetic engineering: Methods and applications
Lecture 55 - Cloning and Gene manipulation
Lecture 56 - Characterization methods
Lecture 57 - Chromatographic methods
Lecture 58 - Protein - ligand interactions
Lecture 59 - Immunoassay techniques
Lecture 60 - Landmark experiments in biology

NPTEL Video Course - Biotechnology - NOC:Biological Data Analysis and Visualization with R

Subject Co-ordinator - Prof. Riddhiman Dhar

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 30 - Non-linear regression
Lecture 31 - Dimensionality reduction
Lecture 32 - Principal Component Analysis (PCA)
Lecture 33 - PCA analysis hands-on
Lecture 34 - PCA analysis using â PCAtoolsâ
Lecture 35 - UMAP analysis
Lecture 36 - Classification of biological samples
Lecture 37 - Penalized and Stepwise Logistic regression
Lecture 38 - Decision trees
Lecture 39 - Classification and Regression trees
Lecture 40 - Random Forests

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 30 - Chromatography
Lecture 31 - Chromatography
Lecture 32 - Chromatography
Lecture 33 - Crystallisation
Lecture 34 - Drying
Lecture 35 - Drying and distillation
Lecture 36 - Future trends

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 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 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

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

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

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 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 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 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

Lecture 69 - Demo

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 Brainâ s Shape - Segment 1 - Brain size and intelligence
Lecture 3 - Understanding Brainâ s Shape - Segment 2 - Save Wire Principle
Lecture 4 - Understanding Brainâ 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

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 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

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}C-Metabolic Flux Analysis using Mass Spectrometry
Lecture 83 - ^{13}C-Metabolic Flux Analysis using Mass Spectrometry
Lecture 84 - ^{13}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 - Obustness and Evolvability
Lecture 98 - obustness 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 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 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

Lecture 69 - Unsteady State Energy Balances

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

NPTEL Video Course - Biotechnology - NOC:Plant Cell Bioprocessing

Subject Co-ordinator - Prof. Smita Srivastava

Co-ordinating Institute - IIT - Madras

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

NPTEL Video Course - Biotechnology - NOC:Tissue Engineering

Subject Co-ordinator - Prof.Vignesh Muthuvijayan

Co-ordinating Institute - IIT - Madras

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

NPTEL Video Course - Biotechnology - NOC:Thermodynamics for Biological Systems: Classical and Statistical Asp

Subject Co-ordinator - Prof. G.K. Suraishkumar, Prof. Sanjib Senapati

Co-ordinating Institute - IIT - Madras

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

Lecture 30 - Partial molar property estimation from mixing experiments
Lecture 31 - Partial molar property estimation (Continued...)
Lecture 32 - Activity coefficient from excess property
Lecture 33 - Activity coefficient from excess property (Continued...)
Lecture 34 - Models for activity coefficient in a binary system
Lecture 35 - Models for activity coefficient for a binary system (Continued...)
Lecture 36 - Review of module 4
Lecture 37 - Criteria for phase equilibrium
Lecture 38 - Phase rule for non-reacting systems
Lecture 39 - Clausius Clayperon equation
Lecture 40 - Clausius Clayperon equation (Continued...)
Lecture 41 - Vapour liquid equilibrium
Lecture 42 - Vapour liquid equilibrium (Continued...)
Lecture 43 - Estimation of fugacity coefficient from P-V-T data at equilibrium
Lecture 44 - Liquid-liquid and solid-liquid equilibria
Lecture 45 - Review of module 5
Lecture 46 - Criteria for bioreaction equilibria
Lecture 47 - Phase rule for reacting biosystems
Lecture 48 - Equilibrium constants
Lecture 49 - Effect of temperature on the equilibrium constants
Lecture 50 - Reaction in liquid or solid phases
Lecture 51 - Free energy changes for some bioreactions
Lecture 52 - Electrolytes
Lecture 53 - Review of the classical thermodynamics part
Lecture 54 - Introduction to Statistical thermodynamics
Lecture 55 - Concepts of macro and microstates
Lecture 56 - Thermodynamic probability
Lecture 57 - Boltzmann distribution law
Lecture 58 - Defining Î² in Boltzmann distribution law
Lecture 59 - Relationship between partition function and thermodynamic quantities
Lecture 60 - Partition function of mono atomic gases
Lecture 61 - Entropy in terms of probablity
Lecture 62 - Gibbs paradox
Lecture 63 - Thermodynamic probability for distinguishable particles
Lecture 64 - Thermodynamic probability for indistinguishable particles
Lecture 65 - Sackur - Tetrode equation
Lecture 66 - Partition function and Helmholtz and Gibbs free energy
Lecture 67 - Ensemble approach
Lecture 68 - Ensemble average, time average, Ergodic hypothesis

Lecture 69 - Partition function for classical systems
Lecture 70 - Pair potentials for atomic systems
Lecture 71 - Potential for molecular systems
Lecture 72 - Computer code for LJ potential
Lecture 73 - Introduction to computer simulations
Lecture 74 - Computer simulations of macromolecules
Lecture 75 - MD simulation examples
Lecture 76 - Link between theory and experiments
Lecture 77 - MD protocol
Lecture 78 - Computer simulation tricks
Lecture 79 - Understanding force fields
Lecture 80 - Idea of Z-matrix
Lecture 81 - Basics of MD simulations
Lecture 82 - Integration algorithms
Lecture 83 - Calculation of Columbic force
Lecture 84 - Calculation of LJ force
Lecture 85 - Monte Carlo simulations
Lecture 86 - Analysis of MD trajectory
Lecture 87 - Case study (water)

NPTEL Video Course - Biotechnology - NOC:Transport Phenomena in Biological Systems

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

Co-ordinating Institute - IIT - Madras

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

Lecture 30 - Capillary Flow
Lecture 31 - Couette Flow
Lecture 32 - Non-dimensional Analysis
Lecture 33 - Unsteady State Flow
Lecture 34 - Unsteady State Flow (Continued...)
Lecture 35 - Pulsatile Flow
Lecture 36 - Turbulent Flow
Lecture 37 - Macroscopic Aspects
Lecture 38 - Friction Factor for Flow through a Straight Horizontal Pipe
Lecture 39 - Application of the Engineering Bernoulli Equation to a Piping Network
Lecture 40 - Stenosis in an Artery
Lecture 41 - Friction Factor for Relative Motion between a Solid and a Liquid
Lecture 42 - Friction Factor for Packed Beds
Lecture 43 - Review of Momentum Flux
Lecture 44 - Review of Momentum Flux (Continued...)
Lecture 45 - Thermal Energy Flux
Lecture 46 - Equation of Energy
Lecture 47 - Temperature Profile in a Tissue
Lecture 48 - Unsteady-state Heat Conduction
Lecture 49 - Review of Heat Flux
Lecture 50 - Charge Flux
Lecture 51 - Charge Flux - Some Fundamentals
Lecture 52 - Charge Flux - Some More Fundamentals
Lecture 53 - Getting Useful Relationships through Maxwell's Equations
Lecture 54 - Charges/Ions in Solution
Lecture 55 - Charge Flux
Lecture 56 - Fluxes Under Simultaneous, Multiple Driving Forces
Lecture 57 - Simultaneous Concentration Gradient and Electrical Potential Gradient
Lecture 58 - Mobility of Ions Across a Membrane
Lecture 59 - Electrical Circuit Representation of a Membrane
Lecture 60 - Action Potential and Axial Current
Lecture 61 - Electrophoresis
Lecture 62 - Simultaneous Concentration Gradient and Velocity Gradient
Lecture 63 - Simultaneous Concentration Gradient and Velocity Gradient - Bioreactor Kla
Lecture 64 - Gas-Liquid Interphase Transport
Lecture 65 - Gas-Liquid Interphase Transport (Continued...)
Lecture 66 - Bioreactor Kla Estimation
Lecture 67 - Liquid Phase Oxygen-Supply Strategy
Lecture 68 - LPOS and Its Mechanism

Lecture 69 - LPOS for Mold Cultivations
Lecture 70 - LPOS Optimization and Costs
Lecture 71 - Couette Flow Cultivations
Lecture 72 - Pseudo-Steady State Approximation Applied to Bio-oil Production
Lecture 73 - Pseudo-Steady State Approximation Applied to Cancer Treatment
Lecture 74 - Kinetics of a Process with an Enzyme Immobilized on a Non-porous Slab
Lecture 75 - Simultaneous Temperature Gradient and Velocity Gradient
Lecture 76 - Design of Heat Exchangers
Lecture 77 - Design of Heat Exchangers (Continued...)
Lecture 78 - Course Review - Part 1
Lecture 79 - Course Review - Part 2
Lecture 80 - Course Review - Part 3
Lecture 81 - Course Review - Part 4

NPTEL Video Course - Biotechnology - NOC:Introduction to Developmental Biology

Subject Co-ordinator - Prof. Subramaniam K

Co-ordinating Institute - IIT - Madras

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

NPTEL Video Course - Biotechnology - NOC:Bioreactor Design and Analysis

Subject Co-ordinator - Prof. Smita Srivastava

Co-ordinating Institute - IIT - Madras

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

NPTEL Video Course - Biotechnology - NOC:Biochemistry (IITM)

Subject Co-ordinator - Prof. Subramaniam K

Co-ordinating Institute - IIT - Madras

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

NPTEL Video Course - Biotechnology - NOC:Cellular Biophysics: A Framework for Quantitative Biology

Subject Co-ordinator - Prof. R. Chaitanya A. Athale

Co-ordinating Institute - IIT - Madras

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

NPTEL Video Course - Biotechnology - NOC:Medical Image Analysis

Subject Co-ordinator - Prof. Ganapathy Krishnamurthi

Co-ordinating Institute - IIT - Madras

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

Lecture 30 - Snakes - Active Contour Models
Lecture 31 - Level Sets, Geodesic Active Contours, Mumford-Shah Functional, Chan-Vese
Lecture 32 - Mumford-Shah Functional, Chan-Vese
Lecture 33 - Segmentation Models Demo [Snakes (Active Contours) Chan-Vese segmentation, Geodesic active Cont
Lecture 34 - Active Shape Models
Lecture 35 - Snake tutorial
Lecture 36 - Level Set Method
Lecture 37 - Chan Vese Segmentation
Lecture 38 - Neural Networks Introduction
Lecture 39 - Linear Regression
Lecture 40 - Gradient Descent Formulation
Lecture 41 - Linear Regression Demo
Lecture 42 - Feed forward neural Networks
Lecture 43 - Example with XOR
Lecture 44 - Introduction to CNNs
Lecture 45 - Max Pooling
Lecture 46 - Applications of Cnns
Lecture 47 - CNN Training
Lecture 48 - Semantic Segmentation
Lecture 49 - Classification Demo in Pytorch
Lecture 50 - Generative Models
Lecture 51 - GAN Final Demo

NPTEL Video Course - Biotechnology - NOC:Organ Printing

Subject Co-ordinator - Prof. Falguni Pati

Co-ordinating Institute - IIT - Madras

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

Lecture 30 - 4D Bioprinting - Part 3
Lecture 31 - In Situ Bioprinting
Lecture 32 - In Situ Bioprinting (Continued...)
Lecture 33 - Medical Modeling for Organ Printing
Lecture 34 - Medical Modeling for Organ Printing (Continued...)
Lecture 35 - Next Step in Bioprinting
Lecture 36 - Next Step in Bioprinting (Continued...)
Lecture 37 - Ethical Issues related to Organ Printing

NPTEL Video Course - Biotechnology - NOC:Introduction to Cell Biology

Subject Co-ordinator - Prof. Girish Ratnaparkhi

Co-ordinating Institute - IIT - Madras

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

NPTEL Video Course - Biotechnology - NOC:RNA Biology

Subject Co-ordinator - Prof. Rajesh Ramachandran

Co-ordinating Institute - IIT - Madras

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

Lecture 30 - snRNA, rRNA, miRNA, siRNA Processing, Export and Function: Nucleo Cytoplasmic Transport
Lecture 31 - snRNA, rRNA, miRNA, siRNA Processing, Export and Function: Nucleoporins and miRNAs
Lecture 32 - snRNA, rRNA, miRNA, siRNA Processing, Export and Function: RNA Export Mechanisms
Lecture 33 - snRNA, rRNA, miRNA, siRNA Processing, Export and Function: RNA Quality Control
Lecture 34 - Mechanisms of RNA Decay and Non Coding RNAs: Decay Pathways
Lecture 35 - Mechanisms of RNA Decay and Non Coding RNAs: The Exosomes
Lecture 36 - Mechanisms of RNA Decay and Non Coding RNAs: mRNA Surveillance
Lecture 37 - Mechanisms of RNA Decay and Non Coding RNAs: Mechanisms of RNA Decay
Lecture 38 - Mechanisms of RNA Decay and Non Coding RNAs: Autoregulation of RNAs
Lecture 39 - Mechanisms of RNA Decay and Non Coding RNAs: Introduction to Non-Coding RNAs
Lecture 40 - Dosage Compensation and X-Inactivation: SRP and Different Modes of Compensation
Lecture 41 - Dosage Compensation and X-Inactivation: Dosage Compensation of X
Lecture 42 - Dosage Compensation and X-Inactivation: Omprinted vs Random X Inactivation
Lecture 43 - Dosage Compensation and X-Inactivation: Molecular Basis of X-Inactivation
Lecture 44 - Dosage Compensation and X-Inactivation: ES Cells and X-Inactivation
Lecture 45 - Dosage Compensation, Xist and ncRNA in Imprinting: The Roles of YY1
Lecture 46 - Dosage Compensation, Xist and ncRNA in Imprinting: shRNAs and Gene Expression
Lecture 47 - Dosage Compensation, Xist and ncRNA in Imprinting: Mechanism of RNAi in Action
Lecture 48 - Dosage Compensation, Xist and ncRNA in Imprinting: Genomic Imprinting in Action
Lecture 49 - Dosage Compensation, Xist and ncRNA in Imprinting: Different ncRNAs and their Roles
Lecture 50 - Dosage Compensation, Xist and ncRNA in Imprinting: lncRNA-Induced Cancer
Lecture 51 - Dosage Compensation, Xist and ncRNA in Imprinting: Xist and Cancer
Lecture 52 - Telomere, Telomerase and Impact on Genomes: The Importance of Telomeres
Lecture 53 - Telomere, Telomerase and Impact on Genomes: Telomerase and Aging
Lecture 54 - Telomere, Telomerase and Impact on Genomes: Telomere Length as Marker of Aging
Lecture 55 - Telomere, Telomerase and Impact on Genomes: Telomeres and Cancer
Lecture 56 - Telomere, Telomerase and Impact on Genomes: Cell Cycle Arrest
Lecture 57 - Telomere, Telomerase and Impact on Genomes: Maintenance and Manipulation of Telomeres
Lecture 58 - Epitranscriptome and Protein Synthesis: Important RNA Modifications
Lecture 59 - Epitranscriptome and Protein Synthesis: Readers, Writes and Erasers
Lecture 60 - Epitranscriptome and Protein Synthesis: Biological Implications of RNA Modifications
Lecture 61 - Epitranscriptome and Protein Synthesis: Roles of RNAs in Translation
Lecture 62 - Epitranscriptome and Protein Synthesis: Mechanism of Translation

NPTEL Video Course - Biotechnology - NOC:Biomechanics

Subject Co-ordinator - Prof. Varadhan

Co-ordinating Institute - IIT - Madras

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

Lecture 30 - Finger muscles
Lecture 31 - Spine anatomy and movements
Lecture 32 - Spine muscles
Lecture 33 - Spine problem
Lecture 34 - Hip anatomy and movements
Lecture 35 - Hip muscles
Lecture 36 - Hip problem
Lecture 37 - Knee anatomy and movements
Lecture 38 - Knee muscles
Lecture 39 - Knee problem
Lecture 40 - Ankle anatomy and movements
Lecture 41 - Ankle muscles
Lecture 42 - Ankle problem
Lecture 43 - Grasping- reaching- chains
Lecture 44 - D.O.F mobility, open/closed chain
Lecture 45 - Forward kinematics and workspace
Lecture 46 - 2R inverse kinematics
Lecture 47 - 3R kinematics forward and inverse
Lecture 48 - D-H parameters
Lecture 49 - Velocity and jacobian
Lecture 50 - 3R velocity
Lecture 51 - Tissues and types of tissues
Lecture 52 - Bone microstructure and cells
Lecture 53 - Properties of bones
Lecture 54 - Wolffs Law and Hookean behavior
Lecture 55 - Elastic properties and stress strain relations
Lecture 56 - Stress strain curve and mechanical properties of biological materials
Lecture 57 - Bending of Bones
Lecture 58 - Viscolelastic modelling
Lecture 59 - Maxwell Model
Lecture 60 - Voight Model
Lecture 61 - Kelvin model
Lecture 62 - Viscoelasticity in bones
Lecture 63 - Tissues and its constituents
Lecture 64 - Cartilages, ligaments and tendons
Lecture 65 - Stress strain relations in tendons
Lecture 66 - Tendon forces and factors affecting tendon property
Lecture 67 - Gliding resistance, tendon wrapping and friction forces
Lecture 68 - Enslaving - Intertendinuos force transfer and motor units

NPTEL Video Course - Biotechnology - Introduction to Synthetic Biology

Subject Co-ordinator - Prof. Karthik Raman

Co-ordinating Institute - IIT - Madras

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

NPTEL Video Course - Biotechnology - NOC:Computational Genomics

Subject Co-ordinator - Prof. Vineet Kumar Sharma

Co-ordinating Institute - IISER Bhopal

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

NPTEL Video Course - Biotechnology - NOC:Human Physiology

Subject Co-ordinator - Prof. Nishikant Subedar

Co-ordinating Institute - IISER Bhopal

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

Lecture 30 - Excretory system : Nephron - Part 2.1
Lecture 31 - Excretory system : Nephron - Part 3
Lecture 32 - Excretory system : Regulation of Osmolarity and counter-current mechanism - Part 1
Lecture 33 - Excretory system : Regulation of Osmolarity and counter-current mechanism - Part 2
Lecture 34 - Excretory system : Regulation of Osmolarity and counter-current mechanism - Part 3
Lecture 35 - Physiology and Introduction of Respiration - Part 1
Lecture 36 - Physiology and Introduction of Respiration - Part 2
Lecture 37 - Respiration - Part 1
Lecture 38 - Respiration - Part 2
Lecture 39 - Respiration - Part 3
Lecture 40 - Respiration - Part 4
Lecture 41 - Physiology of smooth muscles and digestive system - Part 1
Lecture 42 - Physiology of smooth muscles and digestive system - Part 2
Lecture 43 - Physiology of smooth muscles and digestive system - Part 3
Lecture 44 - Physiology of smooth muscles and digestive system - Part 4
Lecture 45 - Secretory functions of alimentary tract - Part 1
Lecture 46 - Secretory functions of alimentary tract - Part 2
Lecture 47 - Secretory functions of alimentary tract and Pancreas - Part 1
Lecture 48 - Secretory functions of alimentary tract and Pancreas - Part 2
Lecture 49 - Secretory functions of Pancreas and liver
Lecture 50 - Secretory functions of Liver and Gallbladder
Lecture 51 - Introduction to Endrocine system
Lecture 52 - Pituitary gland and growth hormone secretion - Part 1
Lecture 53 - Pituitary gland and growth hormone secretion - Part 2
Lecture 54 - Thyroid gland - Part 1
Lecture 55 - Thyroid gland - Part 2
Lecture 56 - Hormones of adrenal cortex - Part 1
Lecture 57 - Hormones of adrenal cortex - Part 2
Lecture 58 - Physiology of Glucocorticoids - Part 1
Lecture 59 - Physiology of Glucocorticoids - Part 2
Lecture 60 - Course Summary

NPTEL Video Course - Biotechnology - NOC:I Think Biology

Subject Co-ordinator - Prof. Kaustubh Rau, Prof. Sravanti Uppaluri, Prof. Divya Uma, Prof. Jayanti Ray Mukher

Co-ordinating Institute - Azim Premji University

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

Lecture 30 - Molecular Biology Techniques
Lecture 31 - Bacterial DNA Isolation and PCR - Hands-on (Guest Lectuer) Dr. Beena DB (Azim Premji University)
Lecture 32 - BT Cotton - Part 1 (Case study)
Lecture 33 - Molecular Biology Techniques - BT Cotton - Part 2 (Case study)
Lecture 34 - Introduction to Evolution
Lecture 35 - Evidences of Evolution
Lecture 36 - Mechanism of Evolution
Lecture 37 - Misconceptions about Evolution - Discussion
Lecture 38 - Human Evolution
Lecture 39 - Species, Speciation and Biodiversity - I
Lecture 40 - Species, Speciation and Biodiversity - II
Lecture 41 - Measuring Biodiversity (Tutorial)
Lecture 42 - Speciation
Lecture 43 - Speciation (Case studies)
Lecture 44 - Introduction to Ecological Interactions - Part 1
Lecture 45 - Ecological Interactions - Part 2
Lecture 46 - Ecological Interactions - Part 3
Lecture 47 - Mutualism - Figs (Case Study)
Lecture 48 - Seed Dispersal (Case study)
Lecture 49 - Introduction to Public Health (Guest Lectuer) Dr.Abha Rao (Public Health Foundation of India)
Lecture 50 - Public Health in India (Guest Lectuer) Dr. Abha Rao (Public Health Foundation of India)
Lecture 51 - Discussion on Public Health - Dr. Abha Rao (PHFI) and Mr. Pratush Brahma (University of Florida)
Lecture 52 - Public Health - Rotavirus (Case study)
Lecture 53 - Public Health - Malaria (Case study) - Part 1
Lecture 54 - Public Health - Malaria (Case study) - Part 2
Lecture 55 - Biology and Climate Change - Part 1
Lecture 56 - Biology and Climate Change - Part 2
Lecture 57 - Biology and Climate Change - Part 3
Lecture 58 - Biodiversity Conservation (Guest Lectuer) Dr. Krishnapriya Tamma (Azim Premji University)
Lecture 59 - Discussion on Biology and Society
Lecture 60 - Discussion on Art and Science
Lecture 61 - Biology and Society - Case study on Stray Dogs
Lecture 62 - Nature Relatedness
Lecture 63 - Course Wrap-Up

NPTEL Video Course - Biotechnology - NOC:Classics in Neuroscience

Subject Co-ordinator - Prof.Varadhan SKM

Co-ordinating Institute - IIT - Madras

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

Lecture 29 - Recording nerve impulses and single action potentials
Lecture 30 - Recording from nerve and plant cells
Lecture 31 - Recording Local circuits, Hodgkin and Huxely contributions - Part 1
Lecture 32 - Hodgkin and Huxely model - Part 2 and Kenneth Cole Contributions
Lecture 33 - GHK equation and HH action potentials
Lecture 34 - First Electrophysiological Evidence for Synaptic Transmission
Lecture 35 - Bernard Katz
Lecture 36 - End-Plate Potential and Synaptic Quanta
Lecture 37 - Eccles and Spinal motor neuron
Lecture 38 - Invertebrate simple systems: Aplysia
Lecture 39 - Other studies of sensory responses
Lecture 40 - Legacy of Golgi and Ramo`n y Cajal
Lecture 41 - Dynamic polarization of Neuron
Lecture 42 - Modern Research
Lecture 43 - Synaptic Integration and Action Potential Initiation
Lecture 44 - Active properties of dendrites
Lecture 45 - Dendritic dominance
Lecture 46 - Dendritic spines
Lecture 47 - Rethinking the concept of Neuron Doctrine
Lecture 48 - Muscle spindles
Lecture 49 - Spinal cord pathways
Lecture 50 - Retinal Processing
Lecture 51 - Keffler Hartline
Lecture 52 - Stephen Kuffler and Horace Barlow
Lecture 53 - Expansion of the Reflex concept
Lecture 54 - Central Pattern generators
Lecture 55 - The cortical column
Lecture 56 - Vernon Mountcastle
Lecture 57 - Central Visual Processing
Lecture 58 - Central Visual Processing and Feature Detectors
Lecture 59 - Intracellular recordings from the brain - Part 1
Lecture 60 - Intracellular recordings from the brain - Part 2
Lecture 61 - Two motor systems
Lecture 62 - Auditory cortex and The pattern theory of olfaction
Lecture 63 - Arousal and Reticular activating system
Lecture 64 - Sleep and Rapid Eye Movements
Lecture 65 - Operant Conditioning by brain stimulation
Lecture 66 - Hypothalamus and Feeding Behavior
Lecture 67 - Brain as a gland

Lecture 68 - Hypothalamic-Neurohypophyseal System
Lecture 69 - Hypothalamic-Adenohypophyseal System
Lecture 70 - Founding Modern Neuroanatomy
Lecture 71 - Psychology and Ethology
Lecture 72 - Karl Lashley
Lecture 73 - Donald Hebb
Lecture 74 - Limbic system-Limbic Lobe and Papez Circuit
Lecture 75 - Limbic system-Kluver-Bucy Syndrome
Lecture 76 - The Limbic system and Amygdala
Lecture 77 - The Hippocampus and Patient H.M
Lecture 78 - Brenda Milner
Lecture 79 - Neurology: Foundations of Brain Imaging
Lecture 80 - The Neurological unit of the Boston City Hospital
Lecture 81 - Derek Denny-Brown, Raymond Adams and C. Miller Fisher
Lecture 82 - Montreal Neurological Institute
Lecture 83 - Cerebral Circulation
Lecture 84 - Spreading depression of Leo and Migraine
Lecture 85 - The Eradication of Polio
Lecture 86 - Origin of Neurosurgery
Lecture 87 - Harvey Cushing
Lecture 88 - Pituitary Surgery
Lecture 89 - Stereotaxy
Lecture 90 - Epilepsy
Lecture 91 - Psychosurgery
Lecture 92 - Antipsychotic Drugs
Lecture 93 - Reserpine
Lecture 94 - Monoamine Oxidase Inhibitors
Lecture 95 - Lithium
Lecture 96 - Benzodiazepines
Lecture 97 - Stress
Lecture 98 - Theoretical Neuroscience: Brain as computer and Computer as Brain
Lecture 99 - John Atanasoff
Lecture 100 - John von Newmann
Lecture 101 - Game and Information theory
Lecture 102 - Cybernetics and Artificial Intelligence
Lecture 103 - Towards Networks of Realistic Neurons: von Newman's Last word
Lecture 104 - Santiago Ramon y Cajal, 'The Peasant Genius'
Lecture 105 - 'Cajal- a giant wakes up'
Lecture 106 - Cajal's modifications to the Golgi method and studies of embryos and various systems

Lecture 107 - Law of dynamic polarization, support from others studies
Lecture 108 - Santiago Ramon y Cajal - Career turning point and Palm Sunday years
Lecture 109 - Cajalâ s trailblazing discoveries that earned him the Nobel Prize
Lecture 110 - 'Enduring Legacy of Cajal'
Lecture 111 - Robert Barany - Early life and prior work done by other scientists
Lecture 112 - Robert Barany - The serendipitous discovery of the caloric test
Lecture 113 - Robert Barany - Vestibular System and connection to Cerebellum
Lecture 114 - Robert Barany - Modern Applications of Barany's work - Space medicine and Astronaut training
Lecture 115 - Robert Barany - Summary of Contributions
Lecture 116 - Charles Sherrington Personal Background
Lecture 117 - Charles Sherrington - quiet mind expt, Neuroplasiticity, animal locomotion studies
Lecture 118 - Charles Sherrington - Reciprocal innervation, Pain and Emotion, Mind and Body
Lecture 119 - Charles Sherrington's Magnum Opus - The integrative action of the nervous system
Lecture 120 - Charles Sherrington - Insights into life and work by Molnar and Brown
Lecture 121 - Charles Sherrington - Summary of contributions
Lecture 122 - Edgar Adrian, Keith Lucas and Novel instruments used in Neurophysiology
Lecture 123 - Edgar Adrian - Early life, All or none principle in neurons, Key findings with Keith Lucas
Lecture 124 - Edgar Adrian - Work with Alexander Forbes, Gasser and Erlanger (St. Louis connection)
Lecture 125 - Edgar Adrian - 'Failed experiment', Perseverance in science
Lecture 126 - Edgar Adrian - Recording from single sensory and motor neurons
Lecture 127 - Edgar Adrian - Nobel Prize, Admin work, Legacy
Lecture 128 - Edgar Adrian - Adventures with EEG
Lecture 129 - Edgar Adrian - Mapping cerebellar cortex, Cerebral cortex, Brain and Behavior, Olfaction
Lecture 130 - Hodgkin and Huxley - Biographical background, Scientific backdrop and state of Neurophysiology
Lecture 131 - Hodgkin and Huxley - Meeting of great minds and Challenges faced - Part 1
Lecture 132 - Hodgkin and Huxley - Meeting of great minds and Challenges faced - Part 2
Lecture 133 - Bernard Katz - personal background, scientific backdrop, soup vs spark debate
Lecture 134 - Bernard Katz - Quantal nature of synaptic transmission, Vesicle hypothesis, foundational work
Lecture 135 - Bernard Katz - del Castillo model of receptor activation, role of calcium in synapses, sodium
Lecture 136 - Bernard Katz Paper: The fine structure of neuromuscular junction of the frog
Lecture 137 - Roger Sperry - Personal Background, Split brain patients, Hemispheric specialization
Lecture 138 - Roger Sperry: Split Brain patients and Dichotomous consciousness
Lecture 139 - Roger Sperry: Unified consciousness and Behavioural differences in split brain patients,
Lecture 140 - Roger Sperry, Gazzaniga's Interpreter theory, Impact on Psychology and Neuroscience, Nobel Priz
Lecture 141 - Roger Sperry's Chemoaffinity hypothesis paper
Lecture 142 - Roger Sperry paper 'Mentalism: Yes, Dualism:No'
Lecture 143 - Jens Christian Skou Part 1 : The Story of Jens Christian Skou's life in science
Lecture 144 - Jens Christian Skou: Sodium Potassium pump overview and Nobel Prize
Lecture 145 - Jens Christian Skou: Paper - 'The Influence of Some Cations on an Adenosine Triphosphate

Lecture 146 - Arvid Carlsson - Personal Background, Education and Early Career, Pivot, Nobel prize contributi
Lecture 147 - Arvid Carlsson - History of L Dopa
Lecture 148 - Arvid Carlsson - Antipsychotics, Dopamine hypothesis, Serotonin and SSRIs, Omeprazole
Lecture 149 - Eric Kandel - Early life and nobel prize winning work
Lecture 150 - Eric Kandel - Synaptic Plasticity
Lecture 151 - Eric Kandel - Aplysia work, Short and long term memory and mechanisms
Lecture 152 - Paul Greengard - The Phosphorylation Paradigm
Lecture 153 - David Hubel and Torsten Wiesel - early life, education and collaboration
Lecture 154 - Hubel and Wiesel - Effect of early visual deprivation on cortical function
Lecture 155 - Hubel and Wiesel - Effect of visual misalignment on binocular integration
Lecture 156 - Hubel and Wiesel - Limited capacity for recovery following early visual deprivation

NPTEL Video Course - Biotechnology - NOC:Advances in Omics

Subject Co-ordinator - Prof. Nagarjun Vijay

Co-ordinating Institute - IISER - Bhopal

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

Lecture 30 - UCSC and IGV genome browsers
Lecture 31 - Mega Omics Projects
Lecture 32 - Genotype-Tissue Expression (GTEx)
Lecture 33 - Encyclopedia of DNA Element (ENCODE)
Lecture 34 - The Cancer Genome Atlas (TCGA)
Lecture 35 - Eukaryotic Genome Sequencing Consortia
Lecture 36 - The Postomics Era
Lecture 37 - RNA-Seq Differential Expression Analysis
Lecture 38 - Gene Loss and its Consequences
Lecture 39 - Establishing Gene loss: Few Examples
Lecture 40 - Course Summary

NPTEL Video Course - Biotechnology - NOC:Statistics for Biomedical Engineers

Subject Co-ordinator - Prof. Babji Srinivasan

Co-ordinating Institute - IIT - Madras

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

Lecture 30 - Multivariate Hypothesis: Two Sample Test
Lecture 31 - Multivariate Hypothesis: Paired T test
Lecture 32 - Multivariate Hypothesis: Paired vs Unpaired Testing
Lecture 33 - Multivariate Hypothesis: Two population variances
Lecture 34 - Multivariate Hypothesis: Multiple Random Variables - Part 1
Lecture 35 - Multivariate Hypothesis: Multiple Random Variables - Part 2
Lecture 36 - Multivariate Hypothesis: Covariance and Correlation
Lecture 37 - One Way ANOVA: Motivation and Assumptions
Lecture 38 - One Way ANOVA: Fixed and Random effects Model
Lecture 39 - One Way ANOVA: Derivation and Confidence Interval
Lecture 40 - One Way ANOVA: Confidence Interval
Lecture 41 - One Way ANOVA: Unbalanced Experiment and Residuals
Lecture 42 - One Way ANOVA: Interpretation of Results
Lecture 43 - Statistical Modeling: Introduction
Lecture 44 - Statistical Modeling: Linear Regression Derivation
Lecture 45 - Statistical Modeling: Linear Regression - Assumption and Residuals
Lecture 46 - Statistical Modeling: Multi Linear Regression
Lecture 47 - Statistical Modeling: Logistic Regression
Lecture 48 - Statistical Modeling: Cross Entropy Loss
Lecture 49 - Statistical Modeling: Gradient Descent
Lecture 50 - Statistical Modeling: One Way Anova via Linear Regression
Lecture 51 - Design Of Experiments: Randomised Complete Block Design - Part 1
Lecture 52 - Design Of Experiments: Randomised Complete Block Design - Part 2
Lecture 53 - RCBD: Math Formulation and Derivation
Lecture 54 - RCBD: Necessity and Application
Lecture 55 - Latin Square: Introduction
Lecture 56 - Latin Square: Math and Formulation
Lecture 57 - Graeco - Latin Square
Lecture 58 - Interaction Among Variables
Lecture 59 - Two-Way ANOVA: Introduction - Part 1
Lecture 60 - Two-Way ANOVA: Introduction - Part 2
Lecture 61 - Two-Way ANOVA: Math and Formulation
Lecture 62 - Factorial Design: 2^2 Experiments
Lecture 63 - Factorial Design: 2^k Experiments - Part 1
Lecture 64 - Factorial Design: 2^k Experiments - Part 2
Lecture 65 - Factorial Design: Blocking
Lecture 66 - Introduction to Python Programming for Biomedical Engineers

NPTEL Video Course - Biotechnology - NOC:Advanced Fluorescence Microscopy and Image Processing

Subject Co-ordinator - Prof. Gunjan Mehta

Co-ordinating Institute - IIT - Hyderabad

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

Lecture 1 - Introduction to Fluorescence Microscopy
Lecture 2 - Introduction to Optics
Lecture 3 - Design of a fluorescence microscope
Lecture 4 - Fluorescent proteins, organic dyes, and protein labelling strategies
Lecture 5 - LIVE Demonstration of the fluorescence microscope, its design and components
Lecture 6 - 6D imaging, live cell imaging, time lapse imaging
Lecture 7 - Quantifying protein dynamics using FRAP, FLIP, FRET
Lecture 8 - LIVE Demonstration for 6D imaging of live cells on a Leica DMi8 inverted fluorescence microscope
Lecture 9 - Types of Illumination Epi, TIRF, HILO, light sheet, two photon
Lecture 10 - Confocal microscopy
Lecture 11 - LIVE Demonstration of the Nikon N-SPARC confocal microscope
Lecture 12 - Super-Resolution Microscopy (SIM, STED, STORM/PALM)
Lecture 13 - Nanomaterials for fluorescence imaging
Lecture 14 - Immunofluorescence IF and Immunohistochemistry IHC
Lecture 15 - Fluorescence In Situ Hybridization FISH, RNA FISH
Lecture 16 - LIVE Demonstration for immunofluroescence procedure
Lecture 17 - Digital images and camera technologies for microscopy
Lecture 18 - CCD, EMCCD, sCMOS Camera
Lecture 19 - LIVE Demonstration for digital images and adjustments
Lecture 20 - Basic operations of ImageJ/FIJI, montage preparation
Lecture 21 - Image filtering and object segmentation
Lecture 22 - Macros, intensity measurement, scale bar, time stamp, colocalization
Lecture 23 - LIVE Demonstration of ImageJ/Fiji based image processing
Lecture 24 - Single molecule imaging and tracking
Lecture 25 - Optical tweezers and traction force microscopy
Lecture 26 - LIVE Demonstration for single-molecule imaging under HILO illumination
Lecture 27 - Spatial transcriptomics and proteomics RNAscope, MERFISH, CODEX
Lecture 28 - High content imaging
Lecture 29 - Designing a fluorescence microscopy experiment

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 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 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

NPTEL Video Course - Biotechnology - NOC:Plant Developmental Biology

Subject Co-ordinator - Prof. Shri Ram Yadav

Co-ordinating Institute - IIT - Roorkee

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

NPTEL Video Course - Biotechnology - NOC:Structural Biology

Subject Co-ordinator - Prof. Saugata Hazra

Co-ordinating Institute - IIT - Roorkee

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

Lecture 30 - 2D and 3D NMR Spectroscopy focusing on protein structure
Lecture 31 - Introduction to Spectroscopy
Lecture 32 - UV-Vis and CD spectroscopy
Lecture 33 - Fluorescence Spectroscopy and Green Fluorescence Protein (GFP)
Lecture 34 - Infrared and Raman Spectroscopy for protein
Lecture 35 - Raman Spectroscopy, Raman Microscopy and Raman Crystallography for studying protein
Lecture 36 - Introduction to Microscopy
Lecture 37 - Functioning details of Cryo Electron Microscopy (Cryo EM)
Lecture 38 - Cryo Electron Microscopy: Data Collection and Analysis
Lecture 39 - A concise story of advancement Cryo-EM
Lecture 40 - Protein Data Bank
Lecture 41 - History of Molecular Visualizations of Biological Macromolecules
Lecture 42 - Description of structure related files (.pdb, .mmcif, .mtz, etc.)
Lecture 43 - Demonstration of COOT
Lecture 44 - 3D visualization using Pymol
Lecture 45 - Demonstration of Pymol
Lecture 46 - Why we need MD Simulation
Lecture 47 - Molecular Dynamic Simulation Process - Part I
Lecture 48 - Molecular Dynamic Simulation Process - Part II
Lecture 49 - Molecular Dynamic Simulation Process - Part III
Lecture 50 - Application of Molecular Dynamic Simulation
Lecture 51 - What, How and Which of Protein Engineering
Lecture 52 - How to make logical Protein Engineering: Process of Rational design
Lecture 53 - Success story of Rational Protein designing: Focusing on De Novo Process
Lecture 54 - Designing Protein by mimicking nature: Process of Directed Evolution
Lecture 55 - Achievement, Challenges, and Future direction in the field of Protein Engineering
Lecture 56 - Introduction to Structure Based Drug Discovery (SBDD)
Lecture 57 - Rational Drug Discovery
Lecture 58 - Docking Based Virtual Screening: Progress, Challenges and Future perspective
Lecture 59 - What makes a small molecule an ideal drug: Developing in silico ADMETox Model
Lecture 60 - Structure Based Drug Discovery: Case study and Conclusion

NPTEL Video Course - Biotechnology - NOC:Experimental Nanobiotechnology

Subject Co-ordinator - Prof. P. Gopinath

Co-ordinating Institute - IIT - Roorkee

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

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

NPTEL Video Course - Biotechnology - NOC:Drug Delivery: Principles and Engineering

Subject Co-ordinator - Rachit Agarwal

Co-ordinating Institute - IISc - Bangalore

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

Lecture 30 - Tissue Engineering - III
Lecture 31 - Drug Delivery in Tissue Engineering - I
Lecture 32 - Drug Delivery in Tissue Engineering - II
Lecture 33 - Implant Associated Infections - I
Lecture 34 - Implant Associated Infections - II
Lecture 35 - Route Specific Delivery
Lecture 36 - Route Specific Delivery
Lecture 37 - Route Specific Delivery
Lecture 38 - Route Specific Delivery
Lecture 39 - Route Specific Delivery
Lecture 40 - Route Specific Delivery
Lecture 41 - Route Specific Delivery
Lecture 42 - Research Paper Discussion
Lecture 43 - Route Specific Delivery
Lecture 44 - Intravenous Administration
Lecture 45 - Immune System - II
Lecture 46 - Complement System and Blood Clotting
Lecture 47 - Blood Clotting and Hemocompatibility of Materials; Adaptive Immune Response
Lecture 48 - Adaptive Immune Response and Vaccine
Lecture 49 - Vaccines
Lecture 50 - Vaccines and Immuno-isolated Cell Therapy
Lecture 51 - Immuno-isolated Cell Therapy
Lecture 52 - Immuno-isolated Cell and Gene Therapy
Lecture 53 - Gene Delivery
Lecture 54 - Gene Delivery
Lecture 55 - Genes as Vaccines
Lecture 56 - Vaccines
Lecture 57 - Cancer Vaccines
Lecture 58 - Cancer Vaccine
Lecture 59 - Responsive Delivery Systems - I
Lecture 60 - Responsive Delivery Systems - II
Lecture 61 - Targeted Drug Delivery System
Lecture 62 - Targeted Drug Delivery System
Lecture 63 - Nanotoxicology and Translation Pathways

NPTEL Video Course - Biotechnology - NOC:Fundamentals of Micro and Nanofabrication

Subject Co-ordinator - Prof. Shankar Selvaraja

Co-ordinating Institute - IISc - Bangalore

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

Lecture 30 - Optical lithography basics
Lecture 31 - Optical Lithography
Lecture 32 - Optical Lithography
Lecture 33 - Projection Lithography
Lecture 34 - Projection Lithography
Lecture 35 - Optical lithography
Lecture 36 - Optical Lithography
Lecture 37 - Lithography process technology glossary
Lecture 38 - Optical Lithography
Lecture 39 - Electron beam lithography
Lecture 40 - Electron beam lithography
Lecture 41 - Emerging lithography techniques
Lecture 42 - Etching Figures of Merit
Lecture 43 - Wet etching Basics
Lecture 44 - Wet Ething Recipes
Lecture 45 - Wet Ething Recipes
Lecture 46 - Dry etch
Lecture 47 - Dry etch
Lecture 48 - Dry etch
Lecture 49 - Dry etch
Lecture 50 - Dry etch
Lecture 51 - Chemical Mechanical Polishing (CMP)
Lecture 52 - Chemical Mechanical Polishing (CMP)
Lecture 53 - Design for Manufacturability - 1
Lecture 54 - Design for Manufacturability - 2
Lecture 55 - Design for Manufacturability
Lecture 56 - Process integration
Lecture 57 - PV integration
Lecture 58 - CMOS integration
Lecture 59 - Lab demo
Lecture 60 - Lab demo
Lecture 61 - CMOS process for photonics application

NPTEL Video Course - Biotechnology - NOC:Optical Spectroscopy and Microscopy: Fundamentals of Optical Measure

Subject Co-ordinator - Prof. Balaji Jayaprakash

Co-ordinating Institute - IISc - Bangalore

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

NPTEL Video Course - Biotechnology - NOC:Cell Biology: Cellular Organization, Division and Processes

Subject Co-ordinator - Prof. Shikha Laloraya

Co-ordinating Institute - IISc - Bangalore

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

Lecture 30 - Stem cells - Part I Intro-SL
Lecture 31 - Stem cells - Part II
Lecture 32 - Nerve cells
Lecture 33 - The Cancer Cell

NPTEL Video Course - Biotechnology - NOC:Microsensors, Implantable Devices and Rodent Surgeries for Biomedica

Subject Co-ordinator - Prof. Shabari Girishan K V, Prof. Hardik J. Pandya

Co-ordinating Institute - RUAS IISc - Bangalore

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