

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

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 1 - Fundamentals of a Living System
- Lecture 2 - Discovery of Genetic Material
- Lecture 3 - Chemical and Physical Properties of Nucleic Acids
- Lecture 4 - Introduction to DNA Replication
- Lecture 5 - Mechanistic Overview of DNA Replication
- Lecture 6 - Gene expression and The Central Dogma of Molecular Biology
- Lecture 7 - Transcription: Involved Machineries and Processes
- Lecture 8 - Translation: Decoding the message of an mRNA
- Lecture 9 - Time-space correlation and fidelity of transcription and translation
- Lecture 10 - Regulation of gene expression
- Lecture 11 - Amino acids, hierarchy of protein structure
- Lecture 12 - Protein folding, Folding funnel, Anfinsen's experiment
- Lecture 13 - Protein-ligand interactions
- Lecture 14 - Allosteric regulation of proteins, e.g. haemoglobin
- Lecture 15 - Membrane proteins
- Lecture 16 - Introduction to enzymes
- Lecture 17 - Theory of enzyme catalysis
- Lecture 18 - Specificity of enzymes, e.g. Chymotrypsin
- Lecture 19 - Enzyme inhibition. Types and mechanism of inhibitors. Design of inhibitors
- Lecture 20 - Engineered enzymes and their applications
- Lecture 21 - Introduction to cells
- Lecture 22 - Visualizing cells
- Lecture 23 - Cell division cycle
- Lecture 24 - Stem Cells
- Lecture 25 - Cancer
- Lecture 26 - Overview of the development of multicellular organization
- Lecture 27 - Pattern formation and growth
- Lecture 28 - Cell division, cell death and tissue homeostasis
- Lecture 29 - Cell Junctions and extracellular matrix

---

Get DIGIMAT For High-Speed Video Streaming of NPTEL and Educational Video Courses in LAN

<http://www.digimat.in>

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

---

- 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 organisms
- 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