NPTEL Video Course - Agriculture - NOC:Thermal Processing of Foods

Subject Co-ordinator - Prof. R. Anandalakshmi

Co-ordinating Institute - IIT - Guwahati

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

Lecture 30 - Regulatory considerations
Lecture 31 - Special Lecture

NPTEL Video Course - Agriculture - NOC:Natural Resources Management

Subject Co-ordinator - Prof. Sudip Mitra

Co-ordinating Institute - IIT - Guwahati

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

Lecture 30 - A Tutorial on Tragedy of the Commons
Lecture 31 - Environmental Management Systems (EMS)
Lecture 32 - National Environment Policy (NEP)
Lecture 33 - Modeling And Simulations Applications in Agriculture for NRM - Part 1
Lecture 34 - Modeling And Simulations Applications in Agriculture for NRM - Part 2
Lecture 35 - Modeling And Simulations Applications in Agriculture for NRM - Part 3
Lecture 36 - Modeling And Simulations Applications in Agriculture for NRM - Part 4
Lecture 37 - Modeling And Simulations Applications in Agriculture for NRM - Part 5
Lecture 38 - Precision Farming and Protected Cultivation - Part 1
Lecture 39 - Precision Farming and Protected Cultivation - Part 2
Lecture 40 - Precision Farming and Protected Cultivation - Part 3
Lecture 41 - Environmental Impact Assessment (EIA) - Part 1
Lecture 42 - Environmental Impact Assessment (EIA) - Part 2
Lecture 43 - Environmental Impact Assessment (EIA) - Part 3
Lecture 44 - Environmental Impact Assessment (EIA) - Part 4
Lecture 45 - Environmental Impact Assessment (EIA) - Part 5
Lecture 46 - Environmental Impact Assessment (EIA) - Part 6
Lecture 47 - Environmental Impact Assessment (EIA) - Part 7
Lecture 48 - CBNRM in Kenya
Lecture 49 - Model sensitivity and Uncertainty
Lecture 50 - MCDA in Agriculture
Lecture 51 - MCDM for NRM - Part 1
Lecture 52 - MCDM for NRM - Part 2
Lecture 53 - MCDM for NRM - Part 3
Lecture 54 - Remote Sensing and GIS Application in Agriculture and NRM (Introduction)
Lecture 55 - Remote Sensing and GIS Application in Agriculture and NRM - Part 1
Lecture 56 - Remote Sensing and GIS Application in Agriculture and NRM - Part 2
Lecture 57 - Remote Sensing and GIS Application in Agriculture and NRM - Part 3
Lecture 58 - Climate change; vulnerability; adaptation - Part 1
Lecture 59 - Climate change; vulnerability; adaptation - Part 2
Lecture 60 - Climate change; vulnerability; adaptation - Part 3
Lecture 61 - ICT: Introduction
Lecture 62 - ICT for Soil management
Lecture 63 - ICT for Water management
Lecture 64 - Collective Management of resources
Lecture 65 - Revision

NPTEL Video Course - Agriculture - NOC:Basic Crop Production Practices (BCPP)

Subject Co-ordinator - Prof. J. R. Yadav, Dr. Vinod Kumar, Dr. Sharwan Kumar Shukla

Co-ordinating Institute - IIT - Kanpur

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

NPTEL Video Course - Agriculture - NOC:GIS in Ag-Essentials and Applications (GIS)

Subject Co-ordinator - Dr. Venkataraman Balaji, Dr. R. Nagarajan

Co-ordinating Institute - IIT - Kanpur

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

Lecture 30 - Impact of Climate on Agriculture
Lecture 31 - Crop Water Requirement and Distribution Loss
Lecture 32 - Village Agriculture and Other Water Demand and Supply Source
Lecture 33 - Water Security Assessment
Lecture 34 - Land Degradation
Lecture 35 - Water Logging
Lecture 36 - Water Balance Under Different Rainfall
Lecture 37 - Drought and Characteristics
Lecture 38 - Drought Vulnerability and Risk Assessment
Lecture 39 - Monitoring and Warning
Lecture 40 - Drought Monitoring
Lecture 41 - Drought Risk and Vulnerability Assessment
Lecture 42 - GIS in Sustainable Agriculture
Lecture 43 - Assessment of Existing Water Storage Structures and Rehabilitation
Lecture 44 - Sustainable Development and Agriculture
Lecture 45 - Climate Change and Drought
Lecture 46 - GIS and Drought Management

NPTEL Video Course - Agriculture - NOC:Integrated Pest Management (IPM)

Subject Co-ordinator - Prof. M. Bheemanna, Prof. B.V. Patil, Prof. Prabhuraj A

Co-ordinating Institute - IIT - Kanpur

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

Lecture 30 - Insecticide Resistance and Management
Lecture 31 - Insecticide as component of IPM
Lecture 32 - Biotechnological Approaches in IPM
Lecture 33 - Agro-ecosystem Analysis
Lecture 34 - IPM in Paddy
Lecture 35 - IPM in Paddy (Continued...)
Lecture 36 - IPM in Pigeon pea
Lecture 37 - IPM in Pigeon pea (Continued...)
Lecture 38 - IPM in Groundnut
Lecture 39 - IPM in Mustard and Soyabean
Lecture 40 - IPM in Cotton
Lecture 41 - IPM in Cotton (Continued...)
Lecture 42 - IPM in Sugarcane
Lecture 43 - IPM in Sugarcane (Continued...)
Lecture 44 - IPM in Tomato
Lecture 45 - IPM in Cabbage
Lecture 46 - IPM in Mango
Lecture 47 - IPM in Grapes

NPTEL Video Course - Agriculture - NOC:Nutrition, Therapeutics and Health (NM)

Subject Co-ordinator - Dr. V. Vijaya Lakshmi (Instructor Incharge)

Co-ordinating Institute - IIT - Kanpur

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

Lecture 30 - Meal planning
Lecture 31 - Other aspects affecting food selection
Lecture 32 - Food sanitation and hygiene
Lecture 33 - Water Purification
Lecture 34 - Therapeutic adaptation of normal diet
Lecture 35 - Principles of therapeutic diet
Lecture 36 - Diet during fevers
Lecture 37 - Diet in lung disease
Lecture 38 - Diet in GI disorders Â constipation
Lecture 39 - Diet during diarrhoea
Lecture 40 - Diet in disorders of liver
Lecture 41 - Diseases of gall bladder
Lecture 42 - Diet in Diabetes
Lecture 43 - Diseases of Heart and blood vessels
Lecture 44 - Diet for myocardial infarction
Lecture 45 - Diet in kidney disorders
Lecture 46 - Diet in renal failure
Lecture 47 - Diet in cancer
Lecture 48 - Diet in metabolic disorders
Lecture 49 - Diet in stress, burns and surgery

NPTEL Video Course - Agriculture - NOC:Weather Forecast in Agriculture and Agro-advisory (WF)

Subject Co-ordinator - Dr. R. Nagarajan, Co Faculty, Dr.T.N.Balasubramanian (Rtd.), Instructor Incharge

Co-ordinating Institute - IIT - Kanpur

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

Lecture 30 - Response farming- a type of farm planning being practiced in Australia considering seasonal clim
Lecture 31 - Case study in India on the adoption of weather based crop production - Crop management
Lecture 32 - Case study in India on the adoption of weather based crop production - Pest and disease manageme
Lecture 33 - Case study in India on the adoption of weather based animal production
Lecture 34 - Cost benefit analysis for the case study done on crop management
Lecture 35 - Cost benefit analysis for the case study done on animal management
Lecture 36 - Summary

NPTEL Video Course - Agriculture - NOC:ICT Basics

Subject Co-ordinator - Prof. T.V. Prabhakar

Co-ordinating Institute - IIT - Kanpur

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

Lecture 30 - Highlights Week-5
Lecture 31 - Social Networking - Part 1
Lecture 32 - Social Networking - Part 2
Lecture 33 - Blogs
Lecture 34 - Facebook
Lecture 35 - Twitter
Lecture 36 - 3G WCDMA (Module- 3)
Lecture 37 - 4G Mobile Wireless WiMAX (Module-4)
Lecture 38 - Advanced Wireless Technologies (Module-5)
Lecture 39 - LTE, WLAN, Bluetooth and Future
Lecture 40 - Highlights Week-6
Lecture 41 - Introduction to Cloud Computing
Lecture 42 - Introduction to Cloud Services
Lecture 43 - Cloud Service Providers
Lecture 44 - GIS Application in Agriculture - Part 1
Lecture 45 - GIS Application in Agriculture - Part 2

NPTEL Video Course - Agriculture - NOC:Momentum Transfer in Process Engineering

Subject Co-ordinator - Prof. Tridib Kumar Goswami

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1
Lecture 2
Lecture 3
Lecture 4
Lecture 5
Lecture 6
Lecture 7
Lecture 8
Lecture 9
Lecture 10
Lecture 11 - Application of Navier Stokeâ s equation for finding out viscosity - Part 2
Lecture 12 - Application of Navier Stokeâ s equation for finding out viscosity - Part 3
Lecture 13 - Flow through pipes
Lecture 14 - Hagen-poiseuille equation from Navier stokes equation
Lecture 15 - Fanning friction factor
Lecture 16 - Moodyâ s chart
Lecture 17 - Laminar and turbulent flow in a pipe
Lecture 18 - Flow through flat and parallel plates
Lecture 19 - Flow of film or film flow
Lecture 20 - Problems and solution of falling film
Lecture 21 - Flow through annulus - Part 1
Lecture 22 - Flow through annulus - Part 2
Lecture 23 - Stokeâ s law
Lecture 24 - Flow through flat plates or slits
Lecture 25 - Problems and solution for flow through flat plates or slits
Lecture 26 - Compressible fluid flow
Lecture 27 - Flow through nozzle - I
Lecture 28 - Flow through nozzle - II
Lecture 29 - Flow through nozzle - problems and solutions

Lecture 30 - Nozzle flow- problems and solutions
Lecture 31 - Sonic velocity
Lecture 32 - Sonic velocity - Mach number
Lecture 33 - Variable fluid flow
Lecture 34 - Variable fluid flow - problems and solutions
Lecture 35 - Variable fluid flow - problems and solutions (Continued...)
Lecture 36 - Pneumatic conveying
Lecture 37 - Problem on Pneumatic conveying - Part 1
Lecture 38 - Problem on Pneumatic conveying - Part 2
Lecture 39 - Non Newtonian fluid flow - Part 1
Lecture 40 - Non Newtonian fluid flow - Part 2
Lecture 41 - Velocity profile for Non Newtonian fluid
Lecture 42 - Average velocity for Non Newtonian fluid
Lecture 43 - Problems and solution of Non Newtonian fluid - Part 1
Lecture 44 - Problems and solution of Non Newtonian fluid - Part 2
Lecture 45 - Flow of Non Newtonian fluid through slit
Lecture 46 - Generalized coefficient of Reynolds number
Lecture 47 - Flow through packed beds
Lecture 48 - Ergunâ s equation- derivation - Part 1
Lecture 49 - Ergunâ s equation- derivation - Part 2
Lecture 50 - Solving problems on Ergunâ s equation
Lecture 51 - Solving problems on Ergunâ s equation
Lecture 52 - Fluidization
Lecture 53 - Fluidized bed flow
Lecture 54 - Problem of Fluidized bed condition - Part 1
Lecture 55 - Problem of Fluidized bed condition - Part 2
Lecture 56 - Problem and solution
Lecture 57 - Problem and solution
Lecture 58 - Problem and solution
Lecture 59 - Problem and solution
Lecture 60 - Problem and solution with comprehension of course

NPTEL Video Course - Agriculture - NOC:Farm Machinery

Subject Co-ordinator - Prof. VK Tewari

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Importance of Farm Machines in the Contest of Enhance Production, Multiple Cropping, Labour Scarc
Lecture 2 - Ploughing and first opening of the soil, the design and component details
Lecture 3 - Tractor, implement and soil force consideration for tillage implement design
Lecture 4 - Tractor, implement and soil force consideration for tillage implement design
Lecture 5 - Mechanics of rotavoator or rotary tillers
Lecture 6 - Design of a tractor PTO operated rotavator
Lecture 7 - Tractor implement hitching systems
Lecture 8 - Mechanics of tractor implement hitch system and traction prediction models
Lecture 9 - Laboratory class on traction and tire testing
Lecture 10 - Combination tillage implements for efficient land preparation
Lecture 11 - LASER guided land laveller
Lecture 12 - Introduction of seeding operation
Lecture 13 - Types of seed metering devices and their operation
Lecture 14 - Types of fertilizer metering, furrow opening and soil covering devices
Lecture 15 - Equipment for seeding and planting
Lecture 16 - Equipment for precision planting
Lecture 17 - Equipment for Paddy Transplanting
Lecture 18 - Microcontroller based uniform seed rate application system
Lecture 19 - GPS based automatic Variable rate fertilizer applicator
Lecture 20 - Embedded GPS integrated Variable Rate Fertilizer Applicator
Lecture 21 - Design of a seeding equipment - PART 1
Lecture 22 - Design of a seeding equipment - PART 2
Lecture 23 - Design of a seeding equipment - PART 3
Lecture 24 - Design a tractor drawn seed drill for a 40 hp tractor - I
Lecture 25 - Design a tractor drawn seed drill for a 40 hp tractor - II
Lecture 26 - Testing of tractor operated seeding equipment
Lecture 27
Lecture 28
Lecture 29

Lecture 30
Lecture 31
Lecture 32 - Farm machines for interculture operation
Lecture 33 - Performance of weeding blades of a push-pull weeder
Lecture 34 - Advanced level machinery for inter and intra row weeding
Lecture 35 - Tractor mounted contact type microcontroller based improved variable rate herbicide applicator
Lecture 36 - Design of manually operated weeding equipment
Lecture 37 - Plant protection equipment/machinery
Lecture 38 - Selection and design of plant protection equipment/machinery
Lecture 39 - Manually operated knapsack-cum-boom sprayer
Lecture 40 - Performance evaluation of sprayer
Lecture 41 - Testing and certification of spraying equipment
Lecture 42 - Problems based on the design and selection of spraying equipment - I
Lecture 43 - Problems based on the design and selection of spraying equipment - II
Lecture 44 - Advanced level spraying equipment
Lecture 45 - Advanced level spraying equipment
Lecture 46 - Harvesting equipment
Lecture 47 - Machines for harvesting cereal crops, root and fruit crops
Lecture 48 - Combine Harvester
Lecture 49 - Advanced technology approach for cotton harvesting
Lecture 50 - hreshing operation and equipment
Lecture 51 - Design of threshing equipment
Lecture 52 - Performance evaluation and testing of thresher
Lecture 53 - Conservation Agriculture
Lecture 54 - Materials for construction of farm machinery
Lecture 55 - Machinery for Land Drainage, Land Reclamation and Estate Maintenance Part - I
Lecture 56 - Machinery for Land Drainage, Land Reclamation and Estate Maintenance Part - II
Lecture 57 - Machinery for Land Drainage, Land Reclamation and Estate Maintenance Part - III
Lecture 58 - Machinery Selection and Management - Part 1
Lecture 59 - Machinery Selection and Management - Part 2
Lecture 60 - Epilogue

NPTEL Video Course - Agriculture - NOC:Irrigation and Drainage

Subject Co-ordinator - Prof. Damodhara Rao Mailapallli

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1
Lecture 2
Lecture 3
Lecture 4
Lecture 5
Lecture 6 - Field water balance
Lecture 7 - Evapotranspiration
Lecture 8 - Crop water requirement
Lecture 9 - Irrigation Scheduling
Lecture 10 - Introduction
Lecture 11 - Irrigation Water Conveyance
Lecture 12 - Irrigation channel design
Lecture 13 - Measurement of Irrigation Water
Lecture 14 - Measurement of Irrigation Water
Lecture 15 - Tutorial
Lecture 16
Lecture 17
Lecture 18
Lecture 19
Lecture 20
Lecture 21
Lecture 22
Lecture 23
Lecture 24
Lecture 25
Lecture 26 - Irrigation Wells
Lecture 27 - Aquifer Properties
Lecture 28 - Well Hydraulics - 1
Lecture 29 - Well Hydraulics - 2

Lecture 30 - Tutorial
Lecture 31 - Introduction
Lecture 32 - Centrifugal Pump
Lecture 33 - Centrifugal Pumps
Lecture 34 - Pump Characteristic Curves
Lecture 35 - Tutorial
Lecture 36 - Management of salt affected soils
Lecture 37 - Management of salt affected soils
Lecture 38 - Agricultural Drainage
Lecture 39 - Agricultural Drainage
Lecture 40 - Tutorial
Lecture 41
Lecture 42
Lecture 43
Lecture 44
Lecture 45
Lecture 46 - Subsurface Drainage Design - 1
Lecture 47 - Subsurface Drainage Design - 2
Lecture 48 - Subsurface Drainage Design - 3
Lecture 49 - Subsurface Drainage Design - 4
Lecture 50 - Tutorial
Lecture 51 - Surface drainage system design - 1
Lecture 52 - Surface drainage system design - 2
Lecture 53 - Non-conventional drainage
Lecture 54 - Economics of drainage project
Lecture 55 - Tutorial
Lecture 56 - Case study of drainage system
Lecture 57 - Drainage Model
Lecture 58 - Irrigation Efficiency
Lecture 59 - Irrigation Economics
Lecture 60 - Irrigation model

NPTEL Video Course - Agriculture - NOC:Fundamentals of Food Process Engineering

Subject Co-ordinator - Prof. Jayeeta Mitra

Co-ordinating Institute - IIT - Kharagpur

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

NPTEL Video Course - Agriculture - NOC:Soil and Water Conservation Engineering

Subject Co-ordinator - Prof. Rajendra Singh

Co-ordinating Institute - IIT - Kharagpur

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

NPTEL Video Course - Agriculture - NOC:Dairy and Food Process and Products Technology

Subject Co-ordinator - Prof. Tridib Kumar Goswami

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 30 - Casein Micelle
Lecture 31 - Whey Protein
Lecture 32 - Whey Protein (Continued...)
Lecture 33 - Lactoferrin
Lecture 34 - Carbohydrates in Milk
Lecture 35 - Small Constituents of Milk
Lecture 36 - Enzymes in Milk
Lecture 37 - Chemical and Microbial Spoilage of Milk and Milk Products
Lecture 38 - Extrinsic Factors for Microbial Growth
Lecture 39 - Natural or Other Type of Spoilage
Lecture 40 - Packaging
Lecture 41 - Milk Pasteurization
Lecture 42 - Thermal Death Time
Lecture 43 - Pasteurization Effectiveness
Lecture 44 - Milk Pasteurization and Homogenization
Lecture 45 - Milk Pasteurization and Homogenization (Continued...)
Lecture 46 - Milk Homogenization
Lecture 47 - Milk Centrifugation
Lecture 48 - Types of Available Milk
Lecture 49 - Types of Available Milk in the Market
Lecture 50 - New Technologies in Dairy Industries
Lecture 51 - Cheese
Lecture 52 - Chedder Cheese
Lecture 53 - Ice Cream
Lecture 54 - Process of Ice Cream Preparation
Lecture 55 - Ice Cream Lolies
Lecture 56 - Over Run and Calculation for Preparing Ice Cream Mix
Lecture 57 - Transportation of Ice Cream vis a vis Frozen Foods
Lecture 58 - Packaging of Food Materials
Lecture 59 - Modified Atmosphere Packaging
Lecture 60 - Flow Chart for Manufacturing Some Dairy and Food Products

NPTEL Video Course - Agriculture - NOC:Organic Farming for Sustainable Agricultural Production

Subject Co-ordinator - Prof. Dilip Kumar Swain

Co-ordinating Institute - IIT - Kharagpur

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

NPTEL Video Course - Agriculture - NOC:Novel Technologies for Food Processing and Shelf Life Extension

Subject Co-ordinator - Prof. Hari Niwas Mishra

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 30 - Extraction of Oil - Part 1
Lecture 31 - Extraction of Oil - Part 2
Lecture 32 - Refining of Oil - Part 1
Lecture 33 - Refining of Oil - Part 2
Lecture 34 - Modified Fats
Lecture 35 - Rancidity
Lecture 36 - Natural Antioxidants
Lecture 37 - Microencapsulation - Part 1
Lecture 38 - Microencapsulation - Part 2
Lecture 39 - Food nanotechnology
Lecture 40 - Respiration and Ripening
Lecture 41 - Modified Atmospheric Storage (MAP)
Lecture 42 - Active Packaging Technology
Lecture 43 - Edible coating technology
Lecture 44 - Multiproduct CA/MA Storage Unit
Lecture 45 - Grain Storage
Lecture 46 - Ozonation of Food Grains
Lecture 47 - Hyper Spectral Imaging for Quality Analysis of Food Grains
Lecture 48 - Non-Destructive Methods for Analysis of Grain Quality
Lecture 49 - Detection of Spoilage in Grains using Biosensors
Lecture 50 - Food Fortification
Lecture 51 - Iron Fortified Rice (IFR)
Lecture 52 - Nutri Dal and Fortified Noodles
Lecture 53 - High Energy RTE Food Paste - Part 1
Lecture 54 - High Energy RTE Food Paste - Part 2
Lecture 55 - Functional Foods and Nutraceuticals
Lecture 56 - Algae Based Health Foods
Lecture 57 - Gluten Free Bread and Pasta
Lecture 58 - Food Powder and Premixes
Lecture 59 - GMP/GHP in Food Industry
Lecture 60 - FCTL R&D and Course Summary

NPTEL Video Course - Agriculture - NOC:Soil Science and Technology

Subject Co-ordinator - Prof. Somsubhra Chakraborty

Co-ordinating Institute - IIT - Kharagpur

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

NPTEL Video Course - Agriculture - NOC:Thermal Operations in Food Process Engineering: Theory and Applicatior

Subject Co-ordinator - Prof. Tridib Kumar Goswami

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 30 - Heat Transfer by Convection(Continued...)
Lecture 31 - Heat Transfer by Convection(Continued...)
Lecture 32 - Heat Transfer by Convection(Continued...)
Lecture 33 - Heat Transfer by Convection(Continued...)
Lecture 34 - Heat Transfer by Radiation
Lecture 35 - Heat Transfer by Radiation (Continued...)
Lecture 36 - Heat Transfer by Convection (Continued...)
Lecture 37 - Heat Transfer by Radiation (Continued...)
Lecture 38 - Heat Transfer by Radiation (Continued...)
Lecture 39 - Boiling and Condensation
Lecture 40 - Boiling (Continued...)
Lecture 41 - Condensation
Lecture 42 - Condensation (Continued...)
Lecture 43 - Heat Exchangers
Lecture 44 - Heat Exchangers (Continued...)
Lecture 45 - Heat Exchangers (Continued...)
Lecture 46 - Heat Exchangers (Continued...)
Lecture 47 - Log mean Temperature Difference
Lecture 48 - Heat Exchangers (Continued...)
Lecture 49 - Heat Exchangers (Continued...)
Lecture 50 - Heat Exchangers (Continued...)
Lecture 51 - Heat Exchangers (Continued...)
Lecture 52 - Heat Exchangers (Continued...)
Lecture 53 - Heat Exchangers (Continued...)
Lecture 54 - Thermal Death Reaction Kinecties
Lecture 55 - Preservation by High Temparature Processing
Lecture 56 - Preservation by High Temparature Processing (Continued...)
Lecture 57 - Distillation
Lecture 58 - Distillation (Continued...)
Lecture 59 - Distillation (Continued...)
Lecture 60 - Drying and Multiple Effect Evaporator

NPTEL Video Course - Agriculture - NOC:Micro Irrigation Engineering

Subject Co-ordinator - Prof. Kamlesh Narayan Tiwari

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Micro-Irrigation: Introduction and Scope
Lecture 2 - Fundamentals of Fluid Mechanics and its Application in MI
Lecture 3 - Soil Water Concept
Lecture 4 - Soil Water Constants and Infiltration
Lecture 5 - Tutorial 1 - Numerical Examples on Fluid Mechanics and Soil water
Lecture 6 - Evapotranspiration
Lecture 7 - Determination of Evapotranspiration
Lecture 8 - Crop Coefficients and Crop Water Requirement
Lecture 9 - Demonstration of Agro Metrological Instruments
Lecture 10 - Demonstration of Lysimeter
Lecture 11 - Tutorial 2 - Numerical Examples on Crop Water Requirement
Lecture 12 - Irrigation Scheduling
Lecture 13 - Soil and Plant Water Monitoring Instruments
Lecture 14 - Measurement of Irrigation Water
Lecture 15 - Irrigation Efficiency
Lecture 16 - Tutorial 3 - Numerical Examples on Irrigation water Management
Lecture 17 - Introduction of Water Lifts and Pumps
Lecture 18 - Variable Displacement Pumps
Lecture 19 - Irrigation Water Quality
Lecture 20 - Tutorial 4 - Numerical Examples on Water Measurements and Pumps
Lecture 21 - Irrigation methods
Lecture 22 - Micro Irrigation System: Concept and Types
Lecture 23 - Drip Irrigation: Introduction and Types
Lecture 24 - Drip Irrigation: Design Considerations and System Layout
Lecture 25 - Types and Selection of Emission Devices
Lecture 26 - Hydraulics Drip Irrigation System Pipe Network
Lecture 27 - Tutorial 5 - Numerical Example on Design of Drip Irrigation System
Lecture 28 - Fertigation
Lecture 29 - Fertigation Application Methods

Lecture 30 - Drip Irrigation: Filtration System
Lecture 31 - Tutorial 6 - Numerical Examples on Emission Devices and Fertigation
Lecture 32 - Installation and Operation of Drip Irrigation System
Lecture 33 - Maintenance of Drip Irrigation System
Lecture 34 - Demonstration of Drip Irrigation Components and Evaluation of Drip Emitter
Lecture 35 - Soil Water Movement under Drip Emitter
Lecture 36 - Design and Development of Drip Emitter
Lecture 37 - Tutorial 7- Numerical Examples on Drip Irrigation System
Lecture 38 - Micro Sprinkler Irrigation System
Lecture 39 - Bubbler Irrigation System
Lecture 40 - Sprinkler Irrigation System
Lecture 41 - Sprinkler Irrigation System Design
Lecture 42 - Performance Evaluation of Sprinkler Irrigation System
Lecture 43 - Tutorial 8 - Numerical Examples on Sprinkler Irrigation System
Lecture 44 - Tutorial 9 - Numerical Examples on Design of Sprinkler Irrigation System
Lecture 45 - Sprinkler Irrigation System: Layout, Installation, Operation and Maintenance
Lecture 46 - Standards and Quality Assurance of MIS Components
Lecture 47 - Standards and Quality Assurance of Sprinkler Irrigation System Components
Lecture 48 - Solar Photovoltaic System for Irrigation - Part 1
Lecture 49 - Solar Photovoltaic System for Irrigation - Part 2
Lecture 50 - Tutorial 10 - Numerical Examples on Solar PV Irrigation System
Lecture 51 - Automation of Micro Irrigation System - Part 1
Lecture 52 - Automation of Micro Irrigation System - Part 2
Lecture 53 - Automation of Micro Irrigation System - Part 3
Lecture 54 - Automation of Micro Irrigation System - Part 4
Lecture 55 - Economic Analysis of Micro Irrigation System - Part 1
Lecture 56 - Economic Analysis of MIS - Part 2
Lecture 57 - Economic Analysis of MIS - Part 3
Lecture 58 - Tutorial 11- Numerical Examples on Economics of Micro Irrigation System
Lecture 59 - Precision Agriculture
Lecture 60 - Micro Irrigation Engineering: Epilogue

NPTEL Video Course - Agriculture - NOC:Instrumentation and Process Control in Food Industry

Subject Co-ordinator - Prof. Ashis Kumar Datta

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 30 - Concepts of Gain Margin and Phase Margins
Lecture 31 - Worked Out Examples
Lecture 32 - Z-Transforms of Sampled Functions
Lecture 33 - Functions Reconstruction and Manipulation
Lecture 34 - Open Loop Z-Transfer Functions
Lecture 35 - Neuro - Fuzzy Logic Controller
Lecture 36 - Auto - Pilot Control Algorithm
Lecture 37 - Fuzzy logic controller algorithm for Soan Papri Manufacture
Lecture 38 - Appendices - Set Theory
Lecture 39 - Fuzzy Sets Theory
Lecture 40 - Worked Out Examples
Lecture 41 - Temperature Standards, Calibration and senssor
Lecture 42 - Vacuum Measurement
Lecture 43 - Viscometer and Cream Separator
Lecture 44 - Spray Dryer and Plate Freezer

NPTEL Video Course - Agriculture - NOC:Machine Learning for Soil and Crop Management

Subject Co-ordinator - Prof. Somsubhra Chakraborty

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 30 - Use of ML for Portable Proximal Soil and Crop Sensors (Continued...)
Lecture 31 - ML and DL for Soil and Crop Image Processing
Lecture 32 - ML and DL for Soil and Crop Image Processing (Continued...)
Lecture 33 - ML and DL for Soil and Crop Image Processing (Continued...)
Lecture 34 - ML and DL for Soil and Crop Image Processing (Continued...)
Lecture 35 - ML and DL for Soil and Crop Image Processing (Continued...)
Lecture 36 - UAV and ML Applications in Agriculture
Lecture 37 - UAV and ML Applications in Agriculture (Continued...)
Lecture 38 - UAV and ML Applications in Agriculture (Continued...)
Lecture 39 - UAV and ML Applications in Agriculture (Continued...)
Lecture 40 - UAV and ML Applications in Agriculture (Continued...)
Lecture 41 - Hyperspectral Remote Sensing and ML Applications in Agriculture
Lecture 42 - Hyperspectral Remote Sensing and ML Applications in Agriculture (Continued...)
Lecture 43 - Hyperspectral Remote Sensing and ML Applications in Agriculture (Continued...)
Lecture 44 - Hyperspectral Remote Sensing and ML Applications in Agriculture (Continued...)
Lecture 45 - Hyperspectral Remote Sensing and ML Applications in Agriculture (Continued...)
Lecture 46 - Digital Soil Mapping - General Overview
Lecture 47 - Digital Soil Mapping - General Overview (Continued...)
Lecture 48 - Digital Soil Mapping - General Overview (Continued...)
Lecture 49 - Digital Soil Mapping - General Overview (Continued...)
Lecture 50 - Digital Soil Mapping - General Overview (Continued...)
Lecture 51 - Digital Soil Mapping With Continuous Variables
Lecture 52 - Digital Soil Mapping With Continuous Variables (Continued...)
Lecture 53 - Digital Soil Mapping With Continuous Variables (Continued...)
Lecture 54 - Digital Soil Mapping With Continuous Variables (Continued...)
Lecture 55 - Digital Soil Mapping With Continuous Variables (Continued...)
Lecture 56 - Digital Soil Mapping With Categorical Variables
Lecture 57 - Digital Soil Mapping With Categorical Variables (Continued...)
Lecture 58 - Digital Soil Mapping With Categorical Variables (Continued...)
Lecture 59 - Digital Soil Mapping With Categorical Variables (Continued...)
Lecture 60 - Digital Soil Mapping With Categorical Variables (Continued...)

NPTEL Video Course - Agriculture - NOC:Advanced Aquaculture Technology

Subject Co-ordinator - Prof. Gourav Dhar Bhowmick

Co-ordinating Institute - IIT - Kharagpur

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

NPTEL Video Course - Agriculture - NOC:Post Harvest Operations and Processing of Fruits, Vegetables, Spices a

Subject Co-ordinator - Prof. Hari Niwas Mishra

Co-ordinating Institute - IIT - Kharagpur

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

NPTEL Video Course - Agriculture - NOC:Soil Fertility and Fertilizers

Subject Co-ordinator - Prof. Somsubhra Chakraborty

Co-ordinating Institute - IIT - Kharagpur

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

NPTEL Video Course - Agriculture - NOC:Cooling Technology: Why and How utilized in Food Processing and Allied

Subject Co-ordinator - Prof. Tridib Kumar Goswami

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 30 - Carnot Refrigeration Cycles (Continued...)
Lecture 31 - Practical Difficulties with Carnot Cycle
Lecture 32 - Dry Compression
Lecture 33 - Problem Solving with Carnot System
Lecture 34 - Pure Substance as Refrigerant
Lecture 35 - Pure Substance as Refrigerant (Continued...)
Lecture 36 - Gas as Refrigerant
Lecture 37 - Gas as Refrigerant (Continued...)
Lecture 38 - Gas as Refrigerant (Continued...)
Lecture 39 - Basics of Refrigeration and Air Conditioning
Lecture 40 - Basics of Refrigeration and Air Conditioning (Continued...)
Lecture 41 - Selection of Condenser
Lecture 42 - Compressor
Lecture 43 - Reciprocating Compressor
Lecture 44 - Reciprocating Compressor (Continued...)
Lecture 45 - Reciprocating Compressor (Continued...)
Lecture 46 - Centrifugal Compressor
Lecture 47 - Rotary, Positive Displacement Type Compressors
Lecture 48 - Condenser
Lecture 49 - Condenser (Continued...)
Lecture 50 - Evaporator and Expansion Device
Lecture 51 - Freezing
Lecture 52 - Crystallization in Freezing
Lecture 53 - Freezing Curve
Lecture 54 - Freezers
Lecture 55 - Control Atmosphere Storage
Lecture 56 - Use of Phase Change Materials (PCM)
Lecture 57 - Cold Chain and Cold Storage
Lecture 58 - Cold Storage
Lecture 59 - Ice Cream
Lecture 60 - Ice Cream (Continued...)

NPTEL Video Course - Agriculture - NOC:Traction Engineering

Subject Co-ordinator - Prof. Hifjur Raheman

Co-ordinating Institute - IIT - Kharagpur

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

NPTEL Video Course - Agriculture - NOC:Food Oils and Fats : Chemistry and Technology

Subject Co-ordinator - Prof. Hari. Niwas Mishra

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 30 - Physical Refining and Deodorization
Lecture 31 - Hydrogenation
Lecture 32 - Interesterification and Winterization
Lecture 33 - Fractionation and Plasticization
Lecture 34 - Margarine and Shortenings
Lecture 35 - Trans-free modifications
Lecture 36 - Animal fats
Lecture 37 - Fish oil and Algal oil
Lecture 38 - Dairy Cream
Lecture 39 - Butter
Lecture 40 - Ghee (Butter Oil)
Lecture 41 - Characteristics and specifications
Lecture 42 - Frying Technology
Lecture 43 - Seed Oils
Lecture 44 - Fruit and Nut Oils
Lecture 45 - Rice Bran Oil
Lecture 46 - Tree Nut Oils
Lecture 47 - Tropical Exotic Oils and Butter
Lecture 48 - Essential Oil
Lecture 49 - Cocoa/Shea Butter and Structured Triacylglycerols
Lecture 50 - Oil powder and liposomes
Lecture 51 - Major by-Products, Their Composition and Uses
Lecture 52 - By-Products Utilization - I
Lecture 53 - By-Products Utilization - II
Lecture 54 - Lecithin Production
Lecture 55 - Biodiesel Production from Waste Cooking Oil
Lecture 56 - Edible Oil Blending and Fortification
Lecture 57 - Packaging materials and methods
Lecture 58 - Handling and Storage
Lecture 59 - Quality Analysis and Control
Lecture 60 - Regulatory Requirements and Course summary

NPTEL Video Course - Agriculture - NOC:Watershed Hydrology

Subject Co-ordinator - Prof. Rajendra Singh

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 30 - Numerical on Synthetic UH, IUH and Distribution Graph - II
Lecture 31 - Drainage Basin Characteristics
Lecture 32 - Drainage Basin Geomorphology
Lecture 33 - Morphometric analysis using RS and GIS
Lecture 34 - Watershed Management - I
Lecture 35 - Watershed Management - II
Lecture 36 - Hydrological Modelling: Introduction and Protocol
Lecture 37 - Hydrological Models: Classification
Lecture 38 - Hydrological Model: Calibration, Validation and Evaluation
Lecture 39 - Sensitivity Analysis and Machine Learning in Hydrology
Lecture 40 - Machine Learning in Hydrology - II
Lecture 41 - Floods
Lecture 42 - Design Flood
Lecture 43 - Flood Frequency Analysis
Lecture 44 - Flood Control and Management
Lecture 45 - Floodplain Zoning and Numerical on Floods
Lecture 46 - Flood Routing: Introduction
Lecture 47 - Hydrologic Reservoir Routing
Lecture 48 - Hydrologic Channel Routing
Lecture 49 - Hydraulic Channel Routing - Hydraulic routing
Lecture 50 - Numerical on Flood Routing
Lecture 51 - Drought: Introduction
Lecture 52 - Classification of Drought
Lecture 53 - Agricultural Drought - I
Lecture 54 - Agricultural Drought - II
Lecture 55 - Drought Management
Lecture 56 - Hydrological Model Demonstration
Lecture 57 - Miscellaneous Topics
Lecture 58 - Objectives on Watershed Hydrology
Lecture 59 - Objectives on Watershed Hydrology
Lecture 60 - Solution of Numerical Problems in Assignments

NPTEL Video Course - Agriculture - NOC:Water Quality Management Practices

Subject Co-ordinator - Prof. Gourav Dhar Bhowmick

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 30 - Types of aeration used in aerobic treatment units and Analysis of Gas Transfer
Lecture 31 - Activated Sludge Process: Description and Types
Lecture 32 - Bacterial growth kinetics in ASP: Biomass mass balance and substrate mass balance
Lecture 33 - Equalization Estimation of values of other operating parameters in ASP
Lecture 34 - Numericals on ASP
Lecture 35 - Sequencing Batch Reactor
Lecture 36 - Trickling Filter- Physical Overview, Types and Process Description
Lecture 37 - Aerated Lagoon, Fluidised Bed Bioreactor, Biological Active Filter
Lecture 38 - Aerated Lagoons, Fluidized Bed Bioreactors, Biological Active Filters
Lecture 39 - Rotating Biological Contactor and Hanging Sponge Reactor
Lecture 40 - Membrane Bioreactor (MBR)
Lecture 41 - Principles of Anaerobic process for wastewater treatment and Methane Production
Lecture 42 - Types of Anaerobic Treatment Systems
Lecture 43 - Factors Affecting Anaerobic Treatment Systems
Lecture 44 - Designs of Anaerobic Reactors: UASB reactor - I
Lecture 45 - Designs of Anaerobic Reactors: UASB reactor - II
Lecture 46 - Pond System, Components, Factors and Terminologies
Lecture 47 - Constructed Wetlands
Lecture 48 - Bio-electrochemical Systems: Types and Definition
Lecture 49 - Hybrid Bio-electrochemical Systems
Lecture 50 - Modular Designs for Smart Cities
Lecture 51 - Nitrification and Denitrification: Major factors
Lecture 52 - Systems used for Nitrification and Denitrification, Anammox Process
Lecture 53 - Biological Phosphorus Removal and Factors affecting it
Lecture 54 - Advanced Oxidation Processes
Lecture 55 - Other Tertiaty treatment systems
Lecture 56 - Disinfection of Wastewater
Lecture 57 - Sludge Management
Lecture 58 - Life-Cycle Costing
Lecture 59 - Case studies
Lecture 60 - Future of Sustainable Wastewater Treatment Technologies

NPTEL Video Course - Agriculture - NOC:Modern Food Packaging Technologies: Regulatory Aspects and Global Trer

Subject Co-ordinator - Prof. Prem Prakash Srivastav

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 30 - Metals as a Packaging Material (Corrosion of Metal Packaging)
Lecture 31 - Testing and Regulatory Aspects of Food Packging
Lecture 32 - Testing and Regulatory Aspects of Food Packging (Continued...)
Lecture 33 - Testing and Regulatory Aspects of Food Packging (Continued...)
Lecture 34 - Special Packging Methods (form-fill-seal machine)
Lecture 35 - Special Packging Methods (controlled atmospheric packaging)
Lecture 36 - Special Packaging Methods (modified atmospheric packaging)
Lecture 37 - Special Packaging Methods (aseptic packaging)
Lecture 38 - Special Packaging Methods (active and intelligent packaging)
Lecture 39 - Packaging of Food Products (meat and poultry products)
Lecture 40 - Packaging of Food Products (meat and poultry products) (Continued...)
Lecture 41 - Packaging of Food Products (meat and poultry products) (Continued...)
Lecture 42 - Packaging of Food Products (dairy and dairy based products)
Lecture 43 - Packaging of Food Products (dairy and dairy based products) (Continued...)
Lecture 44 - Packaging of Food Products (dairy and dairy based products) (Continued...)
Lecture 45 - Packaging of Food Products (fruits and vegetables)
Lecture 46 - Packaging of Food Products (fruits and vegetables) (Continued...)
Lecture 47 - Packaging of Food Products (cereals and flours)
Lecture 48 - Packaging of Food Products (bakery and rte products)
Lecture 49 - Packaging of Food Products (confectionery products)
Lecture 50 - Packaging of Food Products (beverages)
Lecture 51 - Overview to Modern Food Packaging
Lecture 52 - Challenges and Variations in Packaging Industries
Lecture 53 - Recent Trends in Packaging Materials - Biodegradable
Lecture 54 - Recent Trends in Packaging Materials - Edible
Lecture 55 - Recycling and Disposal of Plastic Waste and Environmental Concern
Lecture 56 - Packaging Processes and Machinery
Lecture 57 - Packaging Processes and Machinery (Continued...)
Lecture 58 - Packaging Processes and Machinery (Continued...)
Lecture 59 - Packaging Laws and Regulation
Lecture 60 - FSSAI Regulations on Packaging and Labelling Requirements

NPTEL Video Course - Agriculture - NOC:Basics of Crop Breeding and Plant Biotechnology

Subject Co-ordinator - Prof. Joydeep Banerjee

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 30 - AFLP
Lecture 31 - ISSR, SSR, CAPS
Lecture 32 - Backcross breeding through molecular marker - Part I
Lecture 33 - Backcross breeding through molecular marker - Part II
Lecture 34 - Enzymatic tools used in Molecular Biology
Lecture 35 - Vectors and Plasmids used in Molecular Biology
Lecture 36 - Types of Vectors used in Plant Transformation and Selectable Marker Gene
Lecture 37 - Scorable Marker Gene and Plant Tissue Culture
Lecture 38 - Gene Cloning
Lecture 39 - Promoters and Preparation of Over expression Construct
Lecture 40 - Preparation of Gene Silencing Construct
Lecture 41 - Unidirectional and Bidirectional Promoter, NumericalQuestion on Promoter Analysis
Lecture 42 - Application of Plant Tissue Culture - Part I
Lecture 43 - Application of Plant Tissue Culture - Part II
Lecture 44 - Haploids and Artificial Seeds
Lecture 45 - Gene Transfer Methods
Lecture 46 - Agrobacterium Mediated Transformation in Tobacco and Rice
Lecture 47 - PCR Screening
Lecture 48 - Southern and Northern Blot
Lecture 49 - Western Blot
Lecture 50 - Microarray and Other Screening Methods
Lecture 51 - Molecular Analysis of Transgenic Plants - I
Lecture 52 - Molecular Analysis of Transgenic Plants - II
Lecture 53 - Double Integration - Part I
Lecture 54 - Double Integration - Part II
Lecture 55 - Golden Rice, Bt Cotton, FLAVR SAVR
Lecture 56 - Characterisation of OsGLP1 Gene from Rice - Part I
Lecture 57 - Characterization of OsGLP1 Gene from Rice - Part II
Lecture 58 - Seed Sterilisation and Transformation (Rice and Tobacco)

NPTEL Video Course - Agriculture - NOC:Design of Farm Machinery

Subject Co-ordinator - Prof. Hifjur Raheman

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 30 - Design of single seed metering unit
Lecture 31 - Designs of feed roll shaft, furrow openers and frame
Lecture 32 - Design calculations for fluted roller metering unit and hopper
Lecture 33 - Seed tube and furrow closer
Lecture 34 - Seed flow sensing in a seed drill
Lecture 35 - Design of drum seeder
Lecture 36 - Design of multi-crop drum seeder
Lecture 37 - Deciding the dimensions of a multi-crop dryland drum seeder
Lecture 38 - Design of a remote controlled drum seeder for wetland
Lecture 39 - Granular chemical applicators
Lecture 40 - Liquid chemical applicators
Lecture 41 - Low pressure liquid chemical applicators
Lecture 42 - Selection of pumps for liquid chemical applicators
Lecture 43 - Atomizers
Lecture 44 - Performance evaluation of sprayers
Lecture 45 - Droplet size determination
Lecture 46 - Factors affecting droplet size
Lecture 47 - Solar Energy operated unmanned sprayer
Lecture 48 - Working principle of harvesters
Lecture 49 - Components of harvesting equipment with shear cutting
Lecture 50 - Geometry of knife section and model for estimating load causing failure of stem
Lecture 51 - Design of a self-propelled vertical conveyor reaper
Lecture 52 - Numericals related to cutting by impact and shear
Lecture 53 - Design of an electric-vertical conveyor reaper (E-VCR)
Lecture 54 - Power requirement and field performance of an electric vertical conveyor reaper
Lecture 55 - Onion topper cum digger
Lecture 56 - Classification, working principle and factors influencing performance of threshing equipment
Lecture 57 - Power requirement of threshing equipment and design informations
Lecture 58 - Performance parameter for evaluation of threshers
Lecture 59 - Design of a spike tooth thresher
Lecture 60 - Solar energy operated thresher

NPTEL Video Course - Agriculture - NOC:Food Science and Technology

Subject Co-ordinator - Prof. Hari Niwas Mishra

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 30 - Flavouring Compounds
Lecture 31 - Food Microorganisms
Lecture 32 - Microbial Growth
Lecture 33 - Microbial Spoilage of Foods
Lecture 34 - Prevention of Food Poisoning and Spoilage
Lecture 35 - Beneficial Microorganisms
Lecture 36 - Chemical Food Additives
Lecture 37 - Functional Food Additives
Lecture 38 - Food Adulteration
Lecture 39 - Toxins and Allergens
Lecture 40 - International Regulations on Food Additives
Lecture 41 - Traditional Food Preservation Technologies
Lecture 42 - Chemical and Bio Preservation of Foods
Lecture 43 - Non-Thermal Technologies for Food Preservation
Lecture 44 - Alternate Thermal Technologies for Food Preservation
Lecture 45 - Low-Temperature Preservation of Foods
Lecture 46 - Food Process Principles and Operations
Lecture 47 - Food Formulation and Design
Lecture 48 - Mathematical Tools for Food Formulation
Lecture 49 - Functional and Designer Foods
Lecture 50 - 3D Printed foods for personalized nutrition
Lecture 51 - Concepts in Food Manufacturing and Industry 4.0
Lecture 52 - AI/ML Applications in Food Processing
Lecture 53 - Advanced Instrumentation and Sensors
Lecture 54 - Process Control and Automation
Lecture 55 - Robotics and Future Trends in Food Manufacturing
Lecture 56 - Concept of Circular Economy
Lecture 57 - Grain Processing by-products and Waste Utilization
Lecture 58 - Fruits and Vegetables Processing Industry Waste utilization
Lecture 59 - Fish, Meat and Poultry Processing Waste Utilization
Lecture 60 - Dairy Industry Waste Utilization and Course Summing-up

NPTEL Video Course - Agriculture - NOC:Impact of Flow of Fluids in Food Processing and Preservation

Subject Co-ordinator - Prof. Kanishka Bhunia, Prof. Tridib Kumar Goswami

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 30 - Problems and Solutions On Poiseuille Flow and Couette Flow
Lecture 31 - Problems and Solutions On Spinning
Lecture 32 - Compressible Gas Flow
Lecture 33 - Pressure Drop Relation For Compressible Gas
Lecture 34 - Problem and Its Solutions of Pressure Drop For Compressible Gas Flow
Lecture 35 - Use of Trial and Error Method to Find Pressure Drop
Lecture 36 - Flow Through Packed bed
Lecture 37 - Hydraulic Radius
Lecture 38 - Problems and Solutions of Packed Bed
Lecture 39 - Pressure Drop in Pipes For Compressible Liquids
Lecture 40 - Fluidization
Lecture 41 - Problems and Solution of Fluidization
Lecture 42 - Flow Through Nozzles
Lecture 43 - Bernoulliâ s Equation Used in Nozzle Flow
Lecture 44 - Discharge Rate Through Nozzles
Lecture 45 - Adiabatic Flow Through Refrigeration Unit
Lecture 46 - Problems and Solutions of Nozzle Flow
Lecture 47 - Sonic Velocity
Lecture 48 - Diatomic Gas With Sonic Velocity
Lecture 49 - Variable Flow
Lecture 50 - Pneumatic Conveying
Lecture 51 - Non-Newtonian Fluid Flow
Lecture 52 - Non-Newtonian Fluid Flow (Continued...)
Lecture 53 - Non-Newtonian Fluid Flow (Continued...)
Lecture 54 - Non-Newtonian Fluid Flow (Continued...)
Lecture 55 - Non-Newtonian Fluid Flow (Continued...)
Lecture 56 - Flow Through Filter Medium
Lecture 57 - Flow Through Filter Medium (Continued...)
Lecture 58 - Flow Through Filter Medium (Continued...)
Lecture 59 - Flow Through Filter Medium (Continued...)
Lecture 60 - Flow Through Filter Medium (Continued...)

NPTEL Video Course - Agriculture - NOC:Food Microbiology for Safe and Sustainable Food Systems

Subject Co-ordinator - Prof. Prem Prakash Srivastav

Co-ordinating Institute - IIT - Kharagpur

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

Lecture 1 - Introduction
Lecture 2 - Development in Food Microbiology and Current Status
Lecture 3 - Classification of Microorganisms
Lecture 4 - Classification of Microorganisms (Eukaryotic cell, algae, fingi and molds)
Lecture 5 - Classification of Microorganisms (Molds, Yeasts, Protozoa and Viruses)
Lecture 6 - Sources of Microorganisms
Lecture 7 - Biochemistry of some beneficial traits
Lecture 8 - Food Fermentation
Lecture 9 - Starter culture
Lecture 10 - Interstinal benefical bacteria (Probiotics)
Lecture 11 - Contamination of foods (Chemical Contaminations)
Lecture 12 - Contamination of foods (Biological Contaminations)
Lecture 13 - Contamination of foods (Physical and crosscontamination Contaminations)
Lecture 14 - Various stages of contamination of foods
Lecture 15 - Minimization of food contamiantion
Lecture 16 - Microbial growth characteristics
Lecture 17 - Nature of microbial growth in food
Lecture 18 - Factors affecting microbial growth (intrinsic factors)
Lecture 19 - Factors affecting microbial growth (extrinsic factors)
Lecture 20 - Measurement of microbial growth
Lecture 21 - Overview
Lecture 22 - Spoilage of fruits and vegetables
Lecture 23 - Spoilage of meat, poultry, egg and sea foods
Lecture 24 - Spoilage of dairy and dairy based product
Lecture 25 - Spoilage of cereal product, beverages and canned based Product
Lecture 26 - Food-borne Illnesses
Lecture 27 - Food-borne Intoxication
Lecture 28 - Food-borne Infection
Lecture 29 - Food-borne Toxicoinfections

Lecture 30 - Food-borne diseases and food safety in India
Lecture 31 - Thermal Processing of Food (Blanching, Pasteurization and Appertization)
Lecture 32 - Thermal Processing of Food (Sterilization)
Lecture 33 - Thermal Processing of Food (Thermal Death Rate Kinetics)
Lecture 34 - Irradiation
Lecture 35 - Chemical methods
Lecture 36 - Food Sanitation and Safety
Lecture 37 - Food Sanitation and Safety (Continued...)
Lecture 38 - Microbiological Considerations in Food Packaging
Lecture 39 - Microbiological Considerations in Food Packaging (Continued...)
Lecture 40 - Food Laws and Standards