

- Lecture 1 - Food Microbiology: Microbial Growth and Concerns in Various Foods
- Lecture 2 - Blanching, Pasteurization, Ultra-pasteurization, Hot fill and UHT
- Lecture 3 - Thermal processing equipment
- Lecture 4 - Milk pasteurization
- Lecture 5 - Canning operations
- Lecture 6 - Temperature distribution and heat penetration
- Lecture 7 - Kinetics of reactions
- Lecture 8 - F value and process requirements
- Lecture 9 - Quality considerations and process optimization
- Lecture 10 - Shelf life studies
- Lecture 11 - Validation of heat processes
- Lecture 12 - Fundamentals of aseptic processing
- Lecture 13 - Aseptic equipment design
- Lecture 14 - Aseptic process design
- Lecture 15 - Microwave and radio frequency heating
- Lecture 16 - Ohmic heating
- Lecture 17 - Overview of non-thermal processing technologies
- Lecture 18 - Advanced separation processes
- Lecture 19 - High pressure dialysis, ultrafiltration and reverse osmosis
- Lecture 20 - Nanofiltration, electrodialysis and membrane separation
- Lecture 21 - Various types of heat exchangers for food process engineering
- Lecture 22 - Various types of driers for food process engineering
- Lecture 23 - Importance and applications of extrusion technology in food processing
- Lecture 24 - Changes of properties and functional components of extruded foods
- Lecture 25 - Food biosensors
- Lecture 26 - Types of functional foods: Probiotics and nutraceuticals
- Lecture 27 - Packaging considerations: Barrier and mechanical properties of food packaging materials
- Lecture 28 - Biocomposite/bionanocomposite materials for food packaging applications
- Lecture 29 - Sanitary components and requirements
- Lecture 30 - Regulatory considerations
- Lecture 31 - Special Lecture: Membrane Separation

- Lecture 1 - Introduction to Natural Resource bases - Part 1
- Lecture 2 - Introduction to Natural Resource bases - Part 2A
- Lecture 3 - Introduction to Natural Resource bases - Part 2B
- Lecture 4 - Introduction to Natural Resource bases - Part 2C
- Lecture 5 - Resource management Paradigms - Part 1
- Lecture 6 - Resource management Paradigms - Part 2
- Lecture 7 - Approaches to NRM
- Lecture 8 - Biodiversity and conservation - Part 1
- Lecture 9 - Biodiversity and conservation - Part 2
- Lecture 10 - Biodiversity and conservation - Part 3
- Lecture 11 - Participatory Rural Appraisal and Rapid Rural Appraisal - Part 1
- Lecture 12 - Participatory Rural Appraisal and Rapid Rural Appraisal - Part 2
- Lecture 13 - Participatory Rural Appraisal and Rapid Rural Appraisal - Part 3
- Lecture 14 - Participatory Rural Appraisal and Rapid Rural Appraisal - Part 4
- Lecture 15 - Introduction to INRM
- Lecture 16 - Learning cycle in Integrated Natural Resources Management
- Lecture 17 - Technologies for Integrated Natural Resources Management
- Lecture 18 - PRA techniques within INRM
- Lecture 19 - Ranking technique
- Lecture 20 - Community Based Natural Resources Management - Part 1
- Lecture 21 - Community Based Natural Resources Management - Benefits from CBNRM
- Lecture 22 - Community Based Natural Resources Management - Part 2
- Lecture 23 - Watershed management
- Lecture 24 - Watershed management: Flood control
- Lecture 25 - National Water Policy
- Lecture 26 - Soil erosion management
- Lecture 27 - Landuse management for flood risk reduction
- Lecture 28 - Drought Management
- Lecture 29 - Common Property Right (CPR)
- 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

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[Lecture 2 - Irrigation and irrigation needs](#)

[Lecture 3 - Source of Irrigation](#)

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[Lecture 5 - Crop rotation principle](#)

[Lecture 6 - Importance of vegetable and classification](#)

[Lecture 7 - Paddy crop production](#)

[Lecture 8 - Sorghum crop production](#)

[Lecture 9 - Pearl millet crop production](#)

[Lecture 10 - Maize crop production](#)

[Lecture 11 - Pigeon pea crop production](#)

[Lecture 12 - Green gram crop production](#)

[Lecture 13 - Black gram crop production](#)

[Lecture 14 - Cowpea crop production](#)

[Lecture 15 - Groundnut crop production](#)

[Lecture 16 - Sesame crop production](#)

[Lecture 17 - Soybean crop production](#)

[Lecture 18 - Sunflower crop production](#)

[Lecture 19 - Mango crop production](#)

[Lecture 20 - Guava crop production](#)

[Lecture 21 - Banana crop production](#)

[Lecture 22 - Papaya crop production](#)

[Lecture 23 - Tomato crop production](#)

[Lecture 24 - Brinjal crop production](#)

[Lecture 25 - Chili crop production](#)

[Lecture 26 - Okra crop production](#)

Lecture 1 - Introduction

Lecture 2 - Our Agriculture Practices and Lessons

Lecture 3 - Climate and Scale of Change

Lecture 4 - Course Corrections

Lecture 5 - Modified Agriculture - Precision Agriculture

Lecture 6 - Modified Agriculture Practice - Climate Smart Agriculture

Lecture 7 - Maps and Information in Practice

Lecture 8 - Geographical Information System (GIS)

Lecture 9 - Types of input

Lecture 10 - Analysis - Map overlay

Lecture 11 - Buffering and Perspective View

Lecture 12 - GIS Type and Available GIS Softwares

Lecture 13 - Village Cadastral Map and Property Card

Lecture 14 - Cadastral Maps and Contents

Lecture 15 - Creation of Cadastral Information Base

Lecture 16 - Land Information System

Lecture 17 - Creation of Village Boundary Based Basin Analysis

Lecture 18 - Village Information System

Lecture 19 - Needs and Weather Forecast

Lecture 20 - Cloud Types and Rain Bearing Clouds

Lecture 21 - Weather Satellites and Cloud Pattern Reading

Lecture 22 - Rainfall and Supplementary Irrigation

Lecture 23 - Synergistic Use

Lecture 24 - Surface Rainfall - Run off Assessment and Model

Lecture 25 - Soil and Water Assessment Tools (SWAT) Model

Lecture 26 - Groundwater Availability

Lecture 27 - Groundwater Potential Mapping

Lecture 28 - Water Storage and Water Availability and Release

Lecture 29 - Growth of Crop Area in Command Area and Impact Climate Change

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: Soil Salinity](#)

[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: a global perspective](#)

[Lecture 41 - Drought Risk and Vulnerability Assessment: a global perspective](#)

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[Lecture 45 - Climate Change and Drought: a global perspective](#)

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Lecture 1 - Introduction

Lecture 2 - Insect, abundance and diversity

Lecture 3 - Insect classification based on economic importance

Lecture 4 - Pest, causes for outbreaks and categories

Lecture 5 - Pest, causes for outbreaks and categories (Continued...)

Lecture 6 - Pest surveillance and methods of sampling

Lecture 7 - Principles of Pest Management and History

Lecture 8 - IPM, Definition and Concepts

Lecture 9 - Ecological Methods of Pest Management - Legal and Cultural

Lecture 10 - Ecological Methods of Pest Management - Cultural (Continued...)

Lecture 11 - Ecological Methods of Pest Management - Cultural (Continued...)

Lecture 12 - Ecological Methods of Pest Management - Physical

Lecture 13 - Ecological Methods of Pest Management - Mechanical

Lecture 14 - Host Plant Resistance

Lecture 15 - Host Plant Resistance (Continued...)

Lecture 16 - Biological Control - Predators

Lecture 17 - Biological Control - Parasitoids

Lecture 18 - Biological Control - Microbes: Fungi, Bacteria and Viruses

Lecture 19 - Biological Control - Microbes: Entomopathogenic Nematodes

Lecture 20 - Pest management by modifying insect behaviour

Lecture 21 - Use of sex pheromones in pest management

Lecture 22 - Use of attractants and repellants in pest management

Lecture 23 - Pest management through radiation technology - Principles

Lecture 24 - Sterile Insect Technique - case studies

Lecture 25 - Pest management through botanicals

Lecture 26 - Pest management through botanicals (Continued...)

Lecture 27 - Chemical Control - History and classification

Lecture 28 - Mode of Action of different insecticide groups

Lecture 29 - Chemical Control - Considerations for Chemicals Integration

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](#)

Lecture 1 - Introduction

Lecture 2 - Relationship between Food, Nutrition and Health 1

Lecture 3 - Relationship between Food, Nutrition and Health 2

Lecture 4 - Digestion, absorption and utilization of Nutrients 1

Lecture 5 - Digestion, absorption and utilization of Nutrients 2

Lecture 6 - Recommended dietary allowances

Lecture 7 - Carbohydrate

Lecture 8 - Fiber

Lecture 9 - Protein

Lecture 10 - Protein - health significance

Lecture 11 - Fat

Lecture 12 - Energy 1

Lecture 13 - Energy 2

Lecture 14 - Energy 3

Lecture 15 - Fat Soluble Vitamins 1

Lecture 16 - Fat Soluble Vitamins 2

Lecture 17 - Fat Soluble Vitamins 3

Lecture 18 - Water Soluble Vitamins 1

Lecture 19 - Water Soluble Vitamins 2

Lecture 20 - Water soluble Vitamins 3

Lecture 21 - Water soluble Vitamins 4

Lecture 22 - Major minerals 1

Lecture 23 - Major minerals 2

Lecture 24 - Trace minerals 1

Lecture 25 - Trace minerals 2

Lecture 26 - Water

Lecture 27 - Nutritional Disorders

Lecture 28 - Balanced diet and food groups

Lecture 29 - Food guide for selecting adequate diet, practical aspects of food selection

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 - 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](#)

DIGIMAT - The No.1 Autonomous Learning Platform for Creative Learning

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

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

Lecture 1 - Introduction

Lecture 2 - Basic aspects of Atmosphere, Climate, Weather

Lecture 3 - Basic aspects of Rainfall and their application in crop production

Lecture 4 - Basic aspects of Temperature and their application in crop production

Lecture 5 - Basic aspects of Relative humidity, Cloud cover and their application in crop production

Lecture 6 - Basic aspects of wind, wind direction and their application in crop production

Lecture 7 - Three weather codes and crop production

Lecture 8 - Crop production risks and their management

Lecture 9 - Weather sensitive crops, stages and farm operations

Lecture 10 - Crop-weather interactions and definition

Lecture 11 - Crop-Weather Interactions: Wheat, Rice and Maize

Lecture 12 - Crop-Weather Interactions: Sorghum, Groundnut and Pigeon pea

Lecture 13 - Crop-Weather Interactions: Cotton and Sugarcane

Lecture 14 - Crop-Weather Interactions: Sugarbeet and Chickpea

Lecture 15 - Crop-Weather Interactions: Sunflower and Mustard

Lecture 16 - Genesis of weather forecast in India and Abroad

Lecture 17 - Types of weather forecast and details

Lecture 18 - Types of weather forecast and details (Continued...)

Lecture 19 - Simple methods of verification of weather forecast with real event

Lecture 20 - Traditional knowledges on weather forecast and their validity

Lecture 21 - Weather thumb rules and their validity

Lecture 22 - Development and component of agro advisory for weather forecast

Lecture 23 - Development and component of agro advisory for weather forecast (Continued...)

Lecture 24 - Model agro advisories for selected five days weather forecast

Lecture 25 - Mass communication mode of agro advisories and their effectiveness

Lecture 26 - Discussion on weather forecast and agro advisory from different website

Lecture 27 - Role of climate manager on farm management decision based on weather forecast at village level and assignment

Lecture 28 - Development of selected weather window for issuing agro advisory - case study from Tamil Nadu

Lecture 29 - Model of agro advisory for 54 selected weather window of Tamil Nadu for rice

Lecture 30 - Response farming- a type of farm planning being practiced in Australia considering seasonal climate forecast

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 management](#)

[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](#)

Lecture 1 - Introduction

Lecture 2 - Highlights Week 0 and 1

Lecture 3 - What is ICT?

Lecture 4 - Architecture of a Computer

Lecture 5 - Architecture of a Phone

Lecture 6 - What is the Internet?

Lecture 7 - What is WWW?

Lecture 8 - Highlights Week 2

Lecture 9 - Phones, Smart Phones, Phablets, Tablets

Lecture 10 - Introduction to Android

Lecture 11 - Network Architectures - Part-1 (Introduction to Computer Networks)

Lecture 12 - Network Architectures - Part-2 (Overview of Network Architecture)

Lecture 13 - Network Architectures - Part-3 (Architecture of Internet)

Lecture 14 - Mobile Wireless Communications - Introduction (Module-1)

Lecture 15 - Mobile Wireless Communication (Module-2)

Lecture 16 - Highlights Week 3

Lecture 17 - Adaptive and Responsive Websites

Lecture 18 - Data management

Lecture 19 - Knowledge Representation

Lecture 20 - Knowledge Representation Techniques

Lecture 21 - Expert Systems

Lecture 22 - Highlights Week - 4

Lecture 23 - Speech Recognition

Lecture 24 - Speech Synthesis

Lecture 25 - Identity Management - Part 1

Lecture 26 - Identity Management - Part 2

Lecture 27 - Location Recognition - Part 1

Lecture 28 - Location Recognition - Part 2

Lecture 29 - Parameter Sensing

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](#)

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 Stokes's equation for finding out viscosity - Part 2

Lecture 12 - Application of Navier Stokes'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 - Moody'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 - Stokes'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 - Ergun's equation- derivation - Part 1
- Lecture 49 - Ergun's equation- derivation - Part 2
- Lecture 50 - Solving problems on Ergun's equation
- Lecture 51 - Solving problems on Ergun'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

Lecture 1 - Importance of Farm Machines in the Contest of Enhance Production, Multiple Cropping, Labour Scarcity etc.

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 rotavator 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 leveller

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: Ultrasonic sensor based sprayer

Lecture 45 - Advanced level spraying equipment: Drone assisted variable rate chemical application system and electrostatic sprayer

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 - Threshing 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

Lecture 1 - Introduction

Lecture 2 - Soil Properties - I

Lecture 3 - Soil Properties - II

Lecture 4 - Soil Water

Lecture 5 - Tutorial - I

Lecture 6 - Field water balance

Lecture 7 - Evapotranspiration

Lecture 8 - Crop water requirement

Lecture 9 - Irrigation Scheduling

Lecture 10 - Tutorial

Lecture 11 - Irrigation Water Conveyance System

Lecture 12 - Irrigation Water Conveyance

Lecture 13 - Channel Design Structures

Lecture 14 - Measurement of Irrigation Water: Pipe

Lecture 15 - Tutorial

Lecture 16 - Water Application Methods

Lecture 17 - Surface Irrigation Hydraulics

Lecture 18 - Furrow Irrigation Hydraulics

Lecture 19 - Border Irrigation Design

Lecture 20 - Tutorial

Lecture 21 - Sprinkler Irrigation Design

Lecture 22 - Sprinkler Irrigation : Hydraulic Design

Lecture 23 - Drip Irrigation - I

Lecture 24 - Drip Irrigation Design

Lecture 25 - Tutorial (Week 5)

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: Basics](#)

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[Lecture 34 - Pump Characteristic Curves](#)

[Lecture 35 - Tutorial](#)

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[Lecture 37 - Management of salt affected soils: Saline and alkali soils - 1](#)

[Lecture 38 - Agricultural Drainage: Related Concepts](#)

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[Lecture 40 - Tutorial](#)

[Lecture 41 - Drainage System Components](#)

[Lecture 42 - Drainage System : Drain Pipe](#)

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[Lecture 45 - Tutorial](#)

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[Lecture 50 - Tutorial](#)

[Lecture 51 - Surface drainage system design - 1](#)

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[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](#)

Lecture 1 - Importance Of Rheology In Food

Lecture 2 - Food Rheology

Lecture 3 - Food Rheology

Lecture 4 - Food Rheology

Lecture 5 - Food Rheology

Lecture 6 - Measurements of Rheological Properties

Lecture 7 - Measurements of Rheological Properties

Lecture 8 - Rheological Properties of Viscoelastic Food

Lecture 9 - Rheological Properties of Viscoelastic Food

Lecture 10 - Rheological Properties of Viscoelastic Food

Lecture 11 - Thermal Processing And Microbial Death Kinetics

Lecture 12 - Thermal processing and microbial death kinetics

Lecture 13 - Thermal processing and microbial death kinetics (Continued...)

Lecture 14 - Thermal processing and microbial death kinetics (Continued...)

Lecture 15 - Thermal processing and microbial death kinetics (Continued...)

Lecture 16 - Evaporation and concentration

Lecture 17 - Evaporation and concentration

Lecture 18 - Evaporation and concentration

Lecture 19 - Evaporation and concentration

Lecture 20 - Evaporation and concentration

Lecture 21 - Heat Exchangers

Lecture 22 - Heat Exchangers

Lecture 23 - Heat Exchangers

Lecture 24 - Heat Exchangers

Lecture 25 - Heat Exchangers

Lecture 26 - Drying Technology

Lecture 27 - Drying Technology

Lecture 28 - Drying Technology

Lecture 29 - Drying Technology

Lecture 30 - Drying Technology

Lecture 31 - Freezing and Freeze Drying

[Lecture 32 - Freezing and Freeze Drying](#)

[Lecture 33 - Freezing and Freeze Drying](#)

[Lecture 34 - Freezing and Freeze Drying](#)

[Lecture 35 - Freezing and Freeze Drying](#)

[Lecture 36 - Size Reduction](#)

[Lecture 37 - Size Reduction \(Continued...\)](#)

[Lecture 38 - Size Reduction \(Continued...\)](#)

[Lecture 39 - Size Reduction \(Continued...\)](#)

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**NPTEL : NOC:Post Harvest Operations and Processing of Fruits, Vegetables, Spices and Plantation Crop Products
(Agriculture)**

Co-ordinators : Prof. Hari Niwas Mishra

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Lecture 7 - Post Harvest Operations

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Lecture 10 - Quality Assurance and Control (QA/QC)

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Lecture 12 - Processing by Removal of Water

Lecture 13 - Processing by Addition of Heat

Lecture 14 - Processing by Removal of Heat

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Lecture 18 - Peeling, Coring, Slicing

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Lecture 20 - Packaging Methods and Equipment

Lecture 21 - Minimal Processing

Lecture 22 - Hurdle Technology Concepts

Lecture 23 - Intermediate and High Moisture Fruit Products

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Lecture 25 - Cut Fruits and Vegetables - Part II

Lecture 26 - Juice Extraction and Clarification

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Lecture 12 - Rolling resistance of a pneumatic wheel

Lecture 13 - Motion resistance of a track

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Lecture 20 - Tutorial 4 - Tractive Performance Estimation Using Brixius Model

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Lecture 22 - Selection of tyre

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Lecture 24 - Performance evaluation of a walking tractor fitted with track

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Lecture 3 - Composition, Nutrition and Health Values of Plant Oils

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Lecture 7 - Fatty acids and their types

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Lecture 9 - Triglycerides - Function in Nutrition and Food Processing

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Lecture 12 - Chemical Properties of Edible Oils

Lecture 13 - Rancidity and Reversion

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Lecture 18 - Expression - Pressing

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Lecture 20 - Recent Developments in Oil Expression Technology

Lecture 21 - Extraction principles and mechanisms

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