

NPTEL : NOC:Designing Learner-Centric MOOCs (Multi-Disciplinary)

Co-ordinators : Dr.Sameer Sahasrabudhe, Prof.Sahana Murthy, Prof.Sridhar Iyer, Dr.Jayakrishnan M.

- Lecture 1 - Perceptions of MOOC
- Lecture 2 - Learner Expectation
- Lecture 3 - Learner Engagement
- Lecture 4 - Course Introduction
- Lecture 5 - Evolution of MOOCs
- Lecture 6 - Known Challenges
- Lecture 7 - Why LCM?
- Lecture 8 - The LCM Model
- Lecture 9 - What is an LeD?
- Lecture 10 - Chunking a Lecture into LeD
- Lecture 11 - Introducing Reflection Spot
- Lecture 12 - Making Your Own LeD
- Lecture 13 - Dos and Dont's - Part 1
- Lecture 14 - Dos and Dont's - Part 2
- Lecture 15 - LeDs Takeaway
- Lecture 16 - What is an LbD?
- Lecture 17 - Creating LbDs
- Lecture 18 - Constructive Customized Feedback in LbDs
- Lecture 19 - Giving Feedback for Open Ended Questions
- Lecture 20 - Recommendations for effective LbDs
- Lecture 21 - What is an LxT?
- Lecture 22 - Creating LxTs
- Lecture 23 - Creating an Assimilation Quiz
- Lecture 24 - What is an LxI?
- Lecture 25 - Creating LxIs with Reflection Quiz
- Lecture 26 - Orchestrating your MOOC
- Lecture 27 - Orchestration Dynamics in LCM
- Lecture 28 - Assessment
- Lecture 29 - From Regular course to LCM
- Lecture 30 - Course Design in MOOC
- Lecture 31 - Maintaining Learner Connect

Lecture 32 - Implementing the Learner-Centric Approach

NPTEL : NOC:Introduction to Learning Analytics (Multi-Disciplinary)

Co-ordinators : Prof. Ramkumar Rajendran

Lecture 1 - Introduction to Learning Analytics

Lecture 2 - LA, EDM and Academic Analytics

Lecture 3 - Types of Learning Analytics - I

Lecture 4 - Types of Learning Analytics - II

Lecture 5 - Data Collection

Lecture 6 - Data Collection in TELE

Lecture 7 - Data collection in MOOC

Lecture 8 - Multichannel Data

Lecture 9 - Ethics and Data Privacy in LA

Lecture 10 - Descriptive Analytics

Lecture 11 - Data Visualization

Lecture 12 - YouTube Analytics Dashboard

Lecture 13 - MOOCs Analytics Dashboard

Lecture 14 - Predictive Analytics

Lecture 15 - Linear Regression

Lecture 16 - Weka demo and how to read the results

Lecture 17 - MOOC data for Course Project

Lecture 18 - Summary of the Course

NPTEL : NOC:Designing Learner-Centric e-Learning in STEM Disciplines (Multi-Disciplinary)

Co-ordinators : Prof.Sahana Murthy

Lecture 1 - Course Preview

Lecture 2 - Who Should Join this Course and Why?

Lecture 3 - Course Format_ Learner Centric MOOC (LCM)

Lecture 4 - E Learning in STEM

Lecture 5 - Challenges in e-learning

Lecture 6 - What is Learner Centric Approach

Lecture 7 - Instructional Design in e-learning

Lecture 8 - ADDIE Process of Instructional Design

Lecture 9 - Constructive alignment

Lecture 10 - Implementing constructive alignment

Lecture 11 - Promoting learner engagement with content

Lecture 12 - Interactive video

Lecture 13 - Learning by Doing (LbD)

Lecture 14 - Articulation and Reflection

Lecture 15 - Construct your Own Understanding

Lecture 16 - Contextualized Learning

Lecture 17 - Feedback

Lecture 18 - Collaboration and Peer Learning

Lecture 19 - Addressing Diversity

Lecture 20 - Brief Recap and What's Next?

Lecture 21 - Selection and Analysis of Effective Technology

Lecture 22 - Effective Integration of Technology

Lecture 23 - Multimedia Principle and Contiguity Principle

Lecture 24 - Modality Principle and Redundancy Principle

Lecture 25 - Coherence Principle

Lecture 26 - Segmenting and Personalization Principle

Lecture 27 - Visual Communication Strategies for Developing e-Learning Content

Lecture 28 - Closing

Lecture 29 - Industry Perspective: Forms of E-Learning

Lecture 30 - Industry Perspective: Integrating LC elements in E-content

Lecture 31 - Industry Perspective: E-learning Design Process

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Lecture 1 - Introduction to the Issue of Sanitation

Lecture 2 - Overview of Sanitation in the country

Lecture 3 - Centralised or Decentralised?

Lecture 4 - Need for Participatory Planning

Lecture 5 - Context setting for the Alappuzha Project

Lecture 6 - Environmental Policy

Lecture 7 - Environmental Impact Assessment 2006 and National Urban Sanitation Plan

Lecture 8 - Environmental Governance - Challenges and Alternatives

Lecture 9 - Municipal Solid Waste Management

Lecture 10 - MSWM - Status, Policy, governance structure

Lecture 11 - Integrated Municipal Solid Waste Management

Lecture 12 - Plastic Waste Management

Lecture 13 - Municipal Solid Waste Management in Alappuzha

Lecture 14 - Liquid Waste Management - an Overview

Lecture 15 - Introduction to Faecal Sludge Management

Lecture 16 - Faecal Sludge Management for Alappuzha town

Lecture 17 - Introduction to liquid waste treatment technologies

Lecture 18 - Decentralized Waste Water Treatment system - An Introduction

Lecture 19 - Case studies - Decentralised waste water treatment

Lecture 20 - Decentralized waste water treatment systems plan for Alappuzha

Lecture 21 - History of Sanitation in Alappuzha

Lecture 22 - Organic waste management in Alappuzha

Lecture 23 - Inorganic waste management - Role of Kudumbashree and Haritha Karma Sena

Lecture 24 - Youth engagement for reclaiming canals

Lecture 25 - Significance of institution building in reclaiming canals

NPTEL : NOC:Fuzzy Logic and Neural Networks (Multi-Disciplinary)

Co-ordinators : Prof. Dilip Kumar Pratihari

- Lecture 1 - Introduction to Fuzzy Sets
- Lecture 2 - Introduction to Fuzzy Sets (Continued...)
- Lecture 3 - Introduction to Fuzzy Sets (Continued...)
- Lecture 4 - Introduction to Fuzzy Sets (Continued...)
- Lecture 5 - Introduction to Fuzzy Sets (Continued...)
- Lecture 6 - Introduction to Fuzzy Sets (Continued...)
- Lecture 7 - Applications of Fuzzy Sets
- Lecture 8 - Applications of Fuzzy Sets (Continued...)
- Lecture 9 - Applications of Fuzzy Sets (Continued...)
- Lecture 10 - Applications of Fuzzy Sets (Continued...)
- Lecture 11 - Applications of Fuzzy Sets (Continued...)
- Lecture 12 - Applications of Fuzzy Sets (Continued...)
- Lecture 13 - Applications of Fuzzy Sets (Continued...)
- Lecture 14 - Applications of Fuzzy Sets (Continued...)
- Lecture 15 - Applications of Fuzzy Sets (Continued...)
- Lecture 16 - Applications of Fuzzy Sets (Continued...)
- Lecture 17 - Optimization of Fuzzy Reasoning and Clustering Tool
- Lecture 18 - Optimization of Fuzzy Reasoning and Clustering Tool (Continued...)
- Lecture 19 - Optimization of Fuzzy Reasoning and Clustering Tool (Continued...)
- Lecture 20 - Optimization of Fuzzy Reasoning and Clustering Tool (Continued...)
- Lecture 21 - Some Examples of Neural Networks
- Lecture 22 - Some Examples of Neural Networks (Continued...)
- Lecture 23 - Some Examples of Neural Networks (Continued...)
- Lecture 24 - Some Examples of Neural Networks (Continued...)
- Lecture 25 - Some Examples of Neural Networks (Continued...)
- Lecture 26 - Some Examples of Neural Networks (Continued...)
- Lecture 27 - Some Examples of Neural Networks (Continued...)
- Lecture 28 - Some Examples of Neural Networks (Continued...)
- Lecture 29 - Some Examples of Neural Networks (Continued...)
- Lecture 30 - Some Examples of Neural Networks (Continued...)
- Lecture 31 - Optimal Designs of Neural Networks

[Lecture 32 - Optimal Designs of Neural Networks \(Continued...\)](#)

[Lecture 33 - Neuro-Fuzzy System](#)

[Lecture 34 - Neuro-Fuzzy System \(Continued...\)](#)

[Lecture 35 - Neuro-Fuzzy System \(Continued...\)](#)

[Lecture 36 - Neuro-Fuzzy System \(Continued...\)](#)

[Lecture 37 - Concepts of Soft Computing and Expert Systems](#)

[Lecture 38 - Concepts of Soft Computing and Expert Systems \(Continued...\)](#)

[Lecture 39 - A Few Applications](#)

[Lecture 40 - A Few Applications \(Continued...\)](#)

[Lecture 41 - A Few Applications \(Continued...\)](#)

[Lecture 42 - A Few Applications \(Continued...\)](#)

NPTEL : NOC:Entrepreneurship Essentials (Multi-Disciplinary)

Co-ordinators : Prof. Manoj Kumar Mondal

- Lecture 1 - Introduction
- Lecture 2 - Two Amazing and Inspiring Stories
- Lecture 3 - Myths and Realities About Entrepreneurship
- Lecture 4 - Entrepreneurial Qualities
- Lecture 5 - Why Start-ups Fail
- Lecture 6 - Vision, Mission and Entrepreneurial Qualities
- Lecture 7 - Vision, Mission and Entrepreneurial Qualities (Continued...)
- Lecture 8 - Value Proposition
- Lecture 9 - Business Model generation - I
- Lecture 10 - Business Model generation - II
- Lecture 11 - Competitive Advantage
- Lecture 12 - Lean Startup
- Lecture 13 - Lean Startup (Continued...)
- Lecture 14 - Balanced Founding Team and Early Recruits
- Lecture 15 - Forms of Legal Entities
- Lecture 16 - Marketing for Startups
- Lecture 17 - Marketing for Startups (Continued...)
- Lecture 18 - Marketing Research
- Lecture 19 - Marketing Research (Continued...)
- Lecture 20 - Marketing Research Example
- Lecture 21 - Financial Statements
- Lecture 22 - Financial Statements (Continued...)
- Lecture 23 - Financial Statements (Continued...)
- Lecture 24 - Financial Statements (Continued...)
- Lecture 25 - Financial Statements (Continued...)
- Lecture 26 - Financial Statements (Continued...)
- Lecture 27 - Financial Statements (Continued...)
- Lecture 28 - Break-Even Point (Cost Volume and Profit Analysis)
- Lecture 29 - Break-Even Point (Cost Volume and Profit Analysis) (Continued...)
- Lecture 30 - Break-Even Point (Cost Volume and Profit Analysis) (Continued...)
- Lecture 31 - Writing Business Plan

[Lecture 32 - Writing Business Plan \(Continued...\)](#)

[Lecture 33 - Funding your start up](#)

[Lecture 34 - Funding your start up \(Continued...\)](#)

[Lecture 35 - Funding your start up \(Continued...\)](#)

[Lecture 36 - Funding your start up \(Continued...\)](#)

[Lecture 37 - Funding your start up \(Continued...\)](#)

[Lecture 38 - How to Start a Startup](#)

[Lecture 39 - Go to Market Strategy](#)

[Lecture 40 - Innovation and Entrepreneurship](#)

[Lecture 41 - Innovation and Entrepreneurship \(Continued...\)](#)

[Lecture 42 - Innovation and Entrepreneurship \(Continued...\)](#)

[Lecture 43 - Dos and Don'ts](#)

NPTEL : NOC:Roadmap for Patent Creation (Multi-Disciplinary)

Co-ordinators : Prof. Gouri Gargate

- Lecture 1 - Roadmap for patent creation - Introduction
- Lecture 2 - Roadmap for patent creation - Property and IP
- Lecture 3 - Roadmap for patent creation - IPR
- Lecture 4 - Roadmap for patent creation - IP and future areas
- Lecture 5 - Roadmap for patent creation - Patent - Introduction
- Lecture 6 - Patent searching and analysis
- Lecture 7 - Patent-Definition
- Lecture 8 - Novelty
- Lecture 9 - Non obviousness
- Lecture 10 - Industrial application
- Lecture 11 - Parts of patent document
- Lecture 12 - Terminologies and codes used in a patent document
- Lecture 13 - How to read a patent ? - I
- Lecture 14 - How to read a patent ? - II
- Lecture 15 - How to read a patent ? - III
- Lecture 16 - Roadmap for patent creation - IP identification tool
- Lecture 17 - Roadmap for patent creation - Patentability tool
- Lecture 18 - Roadmap for patent creation - IP audit framework
- Lecture 19 - Roadmap for patent creation - Public patent databases
- Lecture 20 - Roadmap for patent creation - Capsule version
- Lecture 21 - Types of patent
- Lecture 22 - Patent filing procedure in India
- Lecture 23 - Patent timelines - India and PCT
- Lecture 24 - Inventions not patent in India
- Lecture 25 - Indicators for patentability
- Lecture 26 - Use of patent database for research/project topic identification
- Lecture 27 - Importance of laboratory notebook
- Lecture 28 - In which technical category my invention falls - IPC
- Lecture 29 - Patent - Statutory differences between India, Europe and USA
- Lecture 30 - Identification of inventor and applicant and their rights
- Lecture 31 - Developing your own IP system

Lecture 32 - When to publish and when to patent (confidentiality)

Lecture 33 - Statutory exceptions (anticipation)

Lecture 34 - Procedure for patent filing (Forms and fees)

Lecture 35 - Interaction with IP attorney (Initial drafting, FER reply and hearing)

Lecture 36 - Research/project planning

Lecture 37 - Post patent filing requirements

Lecture 38 - Patent commercialization

NPTEL : NOC:Accreditation and Outcome based Learning (Multi-Disciplinary)

Co-ordinators : Prof. Shyamal Kumar Das Mandal

Lecture 1 - Introduction

Lecture 2 - Challenges and Needs of 21st Century Education

Lecture 3 - Accreditation

Lecture 4 - Accreditation (Continued...)

Lecture 5 - Outcome based Learning

Lecture 6 - Important Steps in Outcome based education

Lecture 7 - Introduction to Taxonomies of Learning and Cognitive Domains of Learning

Lecture 8 - Psychomotor Domain and Affective Domain of Learning

Lecture 9 - Instructional Objectives or Outcome

Lecture 10 - Need and Use of Instructional Objectives or Outcome

Lecture 11 - Example of Different Instructional Objectives or Outcome and their Cognitive Level

Lecture 12 - Outcome-based Curriculum Design

Lecture 13 - Outcome-based Curriculum Design (Continued...)

Lecture 14 - Outcome-based Curriculum Design software framework

Lecture 15 - Course outcome, Module outcome and lecture/unit outcome and teaching learning process

Lecture 16 - Mapping of outcome based curriculum with Graduate attribute

Lecture 17 - Introduction to Assessment and Evaluation

Lecture 18 - Formative Assessment and Summative Assessments

Lecture 19 - Test Item analysis

Lecture 20 - Test Item analysis (Continued...)

Lecture 21 - Mapping of Outcome based Curriculum with Graduate Attitude

Lecture 22 - Mission and Vision, Program Educational Objectives (PEOs), Program Outcome (PO) and their Consistency

Lecture 23 - Mapping of course outcome and Program Outcome

Lecture 24 - Attainment of Program outcome and course outcome

Lecture 25 - Calculation of direct attainment

Lecture 26 - Calculation of Indirect Attainment

Lecture 27 - Introduction to Tutoed Video Instruction (TVI)

Lecture 28 - TVI Learning Improvement Data - as reported in literature

Lecture 29 - Use of TVI as ELNET-3L program

Lecture 30 - Lessons on Good Teaching from ELNET-3L

Lecture 31 - Evaluation of Teaching Quality

- Lecture 32 - Evaluation of Teaching Quality - A Research Proposal
- Lecture 33 - Evaluation of Teaching Quality - A Research Proposal (Continued...)
- Lecture 34 - Evaluation of Teaching Quality - A Research Proposal (Continued...)
- Lecture 35 - Assessment and Evaluation - to Improve Teaching
- Lecture 36 - Item Analysis - Theory and Practice
- Lecture 37 - Learning Styles and Learning Approaches
- Lecture 38 - Good Teaching Attributes and Characteristics
- Lecture 39 - Teacher Effectiveness Research
- Lecture 40 - Teacher Effectiveness Research (Continued...)
- Lecture 41 - Teaching Learning Process using Outcome based Education

- Lecture 1 - Sustainability Concepts - Innovations and Challenges
- Lecture 2 - Sustainability Concepts - Innovations and Challenges
- Lecture 3 - Basics and Sustainability Concepts and Evolution
- Lecture 4 - Engineering for Sustainability
- Lecture 5 - Life Cycle Thinking and Circular Economy
- Lecture 6 - Mass Concentration Units
- Lecture 7 - Partial Pressure Units
- Lecture 8 - Other Types of Units
- Lecture 9 - Units (Continued...), Qualitative and Quantitative Measurements
- Lecture 10 - Quantative Measurements Basics
- Lecture 11 - Ecology
- Lecture 12 - Energy Flow and Ecological Concepts
- Lecture 13 - Population
- Lecture 14 - Population, Consumption and Biodiversity
- Lecture 15 - Environmental Chemistry
- Lecture 16 - Mass Balance and Reactor Systems
- Lecture 17 - Mass Balance in Continuous Reactor / Continuous Stirred Tank Reactor (CSTR) and Plug Flow Reactor
- Lecture 18 - Plug Flow Reactor and Energy Flow
- Lecture 19 - Energy Balance and Earth Overshot Day
- Lecture 20 - Mass Transport Processes
- Lecture 21 - Oxygen Demand in Environmental Systems
- Lecture 22 - BOD Examples, Oxygen Levels in Surface Waters, COD
- Lecture 23 - Environmental Health Basics and SDGs
- Lecture 24 - Field Applications
- Lecture 25 - Nutrient Cycle
- Lecture 26 - Environmental Risk
- Lecture 27 - Risk Assessment Steps and EIA Introduction
- Lecture 28 - Environmental Risk Assessments with Concepts of EIA and LCA
- Lecture 29 - Environmental Risk Assessments with Concepts of EIA and LCA (Continued...)
- Lecture 30 - Environmental Risk Assessments with Concepts of EIA and LCA (Continued...)

- Lecture 31 - Water Quantity
- Lecture 32 - Water Availability and Usage
- Lecture 33 - Population Forecasting
- Lecture 34 - Water Quality
- Lecture 35 - Water Quality (Continued...)
- Lecture 36 - Plain Sedimentation
- Lecture 37 - Coagulation
- Lecture 38 - Review of Sedimentation and Rapid Sand Filtration
- Lecture 39 - Disinfection and Water Supply
- Lecture 40 - Water Treatment Plant Visit
- Lecture 41 - Wastewater collection and characterization
- Lecture 42 - Sewerage System and Sewage Characteristics
- Lecture 43 - BOD Concepts and Preliminary Treatment of Wastewater
- Lecture 44 - Wastewater Treatment - I
- Lecture 45 - Activated Sludge Process and Sludge Disposal
- Lecture 46 - Introduction to Solid Waste Management
- Lecture 47 - Introduction to Solid Waste Management (Continued...)
- Lecture 48 - Components of Solid Waste Management
- Lecture 49 - Collection and Treatment
- Lecture 50 - Waste Disposal and Summary
- Lecture 51 - Basics of Air Pollution Issues - Global and Local
- Lecture 52 - Air Pollutants and Air Pollution Index
- Lecture 53 - Global Warming and Climate Change
- Lecture 54 - Air Pollution Models
- Lecture 55 - SDGs, Noise and Soil Pollution
- Lecture 56 - Present Issues and Few Case Studies
- Lecture 57 - Case Study - Solid Waste Management
- Lecture 58 - Case Study - Industrial Pollution and Disasters
- Lecture 59 - Case Study - Global Food Waste Initiatives
- Lecture 60 - Case Study - Global Food Waste and Resource Recovery

NPTEL : NOC:Neuroscience of Human Movement (Multi-Disciplinary)

Co-ordinators : Prof. Varadhan

Lecture 0 - Neuroscience of Human Movement

Lecture 1 - Membrane Physiology - Part 1

Lecture 2 - Membrane Physiology - Part 2

Lecture 3 - Nernst Equation

Lecture 4 - Goldman Equation

Lecture 5 - Action Potential - Part 1

Lecture 6 - Action Potential - Part 2

Lecture 7 - Action Potential - Part 3

Lecture 8 - Action Potential - Part 4

Lecture 9 - Action Potential - Part 5

Lecture 10 - Review of Action Potential and Neurotransmitters

Lecture 11 - Neuromuscular Junction

Lecture 12 - Disorders of Neuromuscular Junction

Lecture 13 - Skeletal Muscles - Part 1

Lecture 14 - Skeletal Muscles - Part 2

Lecture 15 - Skeletal Muscles - Part 3

Lecture 16 - Skeletal Muscles - Part 4

Lecture 17 - Muscle force production

Lecture 18 - Motor Units - Part 1

Lecture 19 - Motor Units - Part 2

Lecture 20 - Motor Units - PIC and EMG

Lecture 21 - Receptors - Part 1

Lecture 22 - Receptors - Part 2

Lecture 23 - Spine and Spinal Cord

Lecture 24 - Excitation and Inhibition within Spinal Cord - Part 1

Lecture 25 - Excitation and Inhibition within Spinal Cord - Part 2

Lecture 26 - Monosynaptic Reflexes - Part 1

Lecture 27 - Monosynaptic Reflexes - Part 2

Lecture 28 - Monosynaptic Reflexes - Part 3

Lecture 29 - Oligosynaptic and Polysynaptic Reflexes - Part 1

Lecture 30 - Oligosynaptic and Polysynaptic Reflexes - Part 2

Lecture 31 - Pre-Programmed Reactions - Part 1

Lecture 32 - Pre-Programmed Reactions - Part 2

Lecture 33 - Spinal Cord Injuries and Central Pattern Generators

Lecture 34 - Animal Preparations for Neuroscience Experiments

Lecture 35 - Overview of motor control system

Lecture 36 - Terminology : Directional Terms and Planes (Primary Motor Cortex - Part - 1)

Lecture 37 - Primary Motor Cortex - Part 2

Lecture 38 - Primary Motor Cortex - Part 3

Lecture 39 - Primary Motor Cortex - Part 4

Lecture 40 - Primary Motor Cortex - Part 5

Lecture 41 - Primary Motor Cortex - Part 6

Lecture 42 - Primary Motor Cortex - Part 7

Lecture 43 - Primary Motor Cortex - Part 8

Lecture 44 - Primary Motor Cortex - Part 9

Lecture 45 - Primary Motor Cortex - Part 10

Lecture 46 - Primary Motor Cortex - Part 11

Lecture 47 - Primary Motor Cortex - Part 12

Lecture 48 - Primary Motor Cortex - Part 13

Lecture 49 - Primary Motor Cortex - Part 14

Lecture 50 - Primary Motor Cortex - Part 15

Lecture 51 - Cerebellum - Part 1

Lecture 52 - Cerebellum - Part 2

Lecture 53 - Cerebellum - Part 3

Lecture 54 - Cerebellum - Part 4

Lecture 55 - Cerebellum - Part 5

Lecture 56 - Cerebellum - Part 6

Lecture 57 - Cerebellum - Part 7

Lecture 58 - Cerebellum - Part 8

Lecture 59 - Cerebellum - Part 9

Lecture 60 - Cerebellum - Part 10

Lecture 61 - Cerebellum - Part 11

Lecture 62 - Cerebellum - Part 12

Lecture 63 - Basal Ganglia - Part 1

Lecture 64 - Basal Ganglia - Pathways

Lecture 65 - Basal Ganglia - Inputs

Lecture 66 - Basal Ganglia - Outputs

Lecture 67 - Basal Ganglia - Various Functions

Lecture 68 - Basal Ganglia - Motor Functions

Lecture 69 - Basal Ganglia - Motor Functions.

Lecture 70 - Basal Ganglia - Dopamine and Acetylcholine

Lecture 71 - Basal Ganglia - Disorders

Lecture 72 - Parkinson's Disease - Intro

Lecture 73 - Parkinson's Disease - Rate Model, Pathophysiology

Lecture 74 - Parkinson's Disease - Current therapeutic approaches and the future

Lecture 75 - Basal Ganglia - Various Disorders

Lecture 76 - Neuropsychiatric disorders due to BG dysfunction

Lecture 77 - Parietal and Premotor Cortex - Part 1

Lecture 78 - Parietal and Premotor Cortex - Part 2

Lecture 79 - Parietal and Premotor Cortex - Part 3

Lecture 80 - Parietal and Premotor Cortex - Part 4

Lecture 81 - Parietal and Premotor Cortex - Part 5

Lecture 82 - Parietal and Premotor Cortex - Part 6

NPTEL : NOC:Manage TB (Multi-Disciplinary)

Co-ordinators : Dr. M S Jawahar, Dr.V.V.Banu Rekha, Prof. Mohan Natrajan

- Lecture 1 - How is TB affecting public health Globally and Nationally
- Lecture 2 - Epidemiology of TB-Session - 1
- Lecture 3 - Epidemiology of TB-Session - 2
- Lecture 4 - Pathogenesis of TB-Session - 1
- Lecture 5 - Pathogenesis of TB-Session - 2
- Lecture 6 - Clinical manifestations of TB-Session - 1
- Lecture 7 - Clinical manifestations of TB-Session - 2
- Lecture 8 - Clinical manifestations of TB-Session - 3
- Lecture 9 - Bacteriological Diagnosis of Tuberculosis - Smear and Culture
- Lecture 10 - Demonstration of processing of sputum specimen for culture for diagnosis of tuberculosis
- Lecture 11 - Demonstration of sputum smear examination for diagnosis of tuberculosis
- Lecture 12 - Demonstration of solid culture method for diagnosis of tuberculosis
- Lecture 13 - Demonstration of liquid culture method for diagnosis of tuberculosis in sputum
- Lecture 14 - Phenotypic drug susceptibility testing in Tuberculosis
- Lecture 15 - Demonstration of drug susceptibility testing of first line anti-TB drugs by liquid culture
- Lecture 16 - Molecular Diagnosis of Tuberculosis-Session - 1
- Lecture 17 - Molecular Diagnosis of Tuberculosis-Session - 2
- Lecture 18 - Demonstration of Xpert MTB-RIF assay for diagnosis of tuberculosis from sputum specimens
- Lecture 19 - Demonstration of Line Probe Assay (LPA) (Direct detection of tuberculosis and resistance to isoniazid and rifampicin) in sputum
- Lecture 20 - Radiology in diagnosis of Tuberculosis-Session - 1
- Lecture 21 - Radiology in diagnosis of Tuberculosis-Session - 2
- Lecture 22 - Radiology in diagnosis of Tuberculosis-Session - 3
- Lecture 23 - Radiology in diagnosis of Tuberculosis-Session - 4
- Lecture 24 - Approach to diagnosis of Pulmonary TB
- Lecture 25 - Case Discussion-Approach to diagnosis of TB in a person with presumptive pulmonary TB
- Lecture 26 - Case Discussion-Approach to diagnosis of pulmonary TB in a patient with negative sputum smear for AFB
- Lecture 27 - Approach to diagnosis of Extra-pulmonary TB
- Lecture 28 - Case Discussion-Approach to diagnosis of TB in a person with swelling in the neck
- Lecture 29 - Case Discussion-Approach to diagnosis of TB spine
- Lecture 30 - Diagnosis of Childhood Tuberculosis-Session - 1

- Lecture 31 - Diagnosis of Childhood Tuberculosis-Session - 2
- Lecture 32 - Video demonstration of gastric fluid aspiration technique in a child
- Lecture 33 - Case Discussion-Approach to diagnosis of TB in a child with presumptive pulmonary TB
- Lecture 34 - Case Discussion-Approach to diagnosis of TB meningitis in a child
- Lecture 35 - Drugs for treating Tuberculosis and Principles of Chemotherapy-Session - 1
- Lecture 36 - Drugs for treating Tuberculosis and Principles of Chemotherapy-Session - 2
- Lecture 37 - Treatment of Drug Sensitive Pulmonary Tuberculosis
- Lecture 38 - Case discussion-Approach to treatment of drug sensitive TB
- Lecture 39 - Management of drug resistant Tuberculosis-Session - 1
- Lecture 40 - Management of drug resistant Tuberculosis-Session - 2
- Lecture 41 - Case discussion-Approach to treatment of Multi-drug resistant TB (MDR-TB)/ Extensively drug resistant TB (XDR-TB)
- Lecture 42 - Management of Extra-pulmonary Tuberculosis-Session - 1
- Lecture 43 - Management of Extra-pulmonary Tuberculosis-Session - 2
- Lecture 44 - Panel discussion-Practical difficulties in the management of Extra-pulmonary TB
- Lecture 45 - Management of patients with HIV-TB coinfection-Session - 1
- Lecture 46 - Management of patients with HIV-TB coinfection-Session - 2
- Lecture 47 - Case discussion-Approach to management of HIV-TB
- Lecture 48 - Management of TB in special situations
- Lecture 49 - Case discussion-Approach to management of TB in pregnancy
- Lecture 50 - Treatment of Pediatric Tuberculosis-Session - 1
- Lecture 51 - Treatment of Pediatric Tuberculosis-Session - 2
- Lecture 52 - Management of Adverse effects to anti-TB drugs-Session - 1
- Lecture 53 - Management of Adverse effects to anti-TB drugs-Session - 2
- Lecture 54 - Case discussion-Approach to management of jaundice during anti-TB treatment
- Lecture 55 - Case discussion-Approach to management of skin rashes during anti-TB treatment
- Lecture 56 - Non-tuberculous Mycobacteria- Diagnosis and Clinical management-Session - 1
- Lecture 57 - Non-tuberculous Mycobacteria - Diagnosis and Clinical Management Session - 2
- Lecture 58 - Newer Anti-TB drugs and regimens-Session - 1
- Lecture 59 - Newer Anti-TB drugs and regimens-Session - 2
- Lecture 60 - Management of Latent TB Infection-Session - 1
- Lecture 61 - Management of Latent TB Infection-Session - 2
- Lecture 62 - Airborne infection control in tuberculosis-Session - 1
- Lecture 63 - Airborne infection control in tuberculosis-Session - 2

Lecture 64 - Vaccine for Tuberculosis-Session - 1

Lecture 65 - Vaccine for Tuberculosis-Session - 2

Lecture 66 - Services offered by Revised National TB Control Programme (RNTCP)-Session - 1

Lecture 67 - Services offered by Revised National TB Control Programme (RNTCP)-Session - 2

Lecture 68 - Services offered by Revised National TB Control Programme (RNTCP)-Session - 3

Lecture 69 - Services offered by Revised National TB Control Programme (RNTCP)-Session - 4

Lecture 70 - Tuberculosis notification-Session - 1

Lecture 71 - Tuberculosis notification-Session - 2

Lecture 72 - Addressing Social Barriers in Tuberculosis Control-Session - 1

Lecture 73 - Addressing Social Barriers in Tuberculosis Control-Session - 2

Lecture 74 - Standards for TB Care in India-Session - 1

Lecture 75 - Standards for TB Care in India-Session - 2

Lecture 76 - Global Tuberculosis Control Strategies

NPTEL : NOC:Ecology and Environment (Multi-Disciplinary)

Co-ordinators : Dr. Abhijit P. Deshpande

Lecture 1 - Sustainability

Lecture 2 - Dams

Lecture 3 - Dams

Lecture 4 - Adayar River

Lecture 5 - Adayar River

Lecture 6 - Urbanisation in Western Ghats and Biodiesel

Lecture 7 - Use And Throw Plastic

Lecture 8 - Nano Materials Information Technology

Lecture 9 - Definition of Health Risk

Lecture 10 - Transport Of Pollutants in the Environment

Lecture 11 - Assesment of Risk

Lecture 12 - Remediation and Liability

Lecture 13 - Remendiation and Liability

Lecture 14 - Life Cycle Analysis

Lecture 15 - Energy and Environment module - 1

Lecture 16 - Energy and Environment module - 2

Lecture 17 - Energy and Environment module - 3

Lecture 18 - Energy and Environment module - 4

Lecture 19 - Energy and Environment module - 5

Lecture 20 - Energy and Environment module - 6

Lecture 21 - Energy and Environment module - 7

Lecture 22 - Drinking Water Supply: Need and Challenges

Lecture 23 - Drinking Water Supply: Need and Challenges

Lecture 24 - Water Quality Standards And Philosophy of Water Treatment

Lecture 25 - Water Treatment: Point Of Use Filters

Lecture 26 - Wastewater Management in Developing Urban Environments: Indian Scenario

Lecture 27 - Wastewater Recycling: A Sustainable Option For Water Management

Lecture 28 - Sustainable Water Management In Urban Areas - Part 1

Lecture 29 - Sustainable Water Management In Urban Areas - Part 2

Lecture 30 - Ground Water Contamination

Lecture 31 - Groundwater - Sanitation Nexus

Lecture 32 - Chasing Sustainability - The Challenge - Part 1

Lecture 33 - Chasing Sustainability - The Challenge - Part 2

Lecture 34 - Developing Frame Works Of Action: Ethics - Part 1

Lecture 35 - Developing Frame Works Of Action: Ethics - Part 2

Lecture 36 - Social And sanitation

Lecture 37 - Promoting Policies For Eco-Productive Cities in the global House - Part 1

Lecture 38 - Promoting Policies For Eco-Productive Cities in the global House - Part 2

Lecture 39 - The need to study ecology

Lecture 40 - Ecosystem functions and services

Lecture 41 - What is studied in ecology?

Lecture 42 - Ecological footprint

Lecture 43 - Energy and Material flow in ecosystems and ecological efficiency

Lecture 44 - Energy flow, productivity and Biodiversity

Lecture 45 - Biodiversity, population and ecological principles

NPTEL : NOC:Current Regulatory Requirements for Conducting Clinical Trials in India (Multi-Disciplinary)

Co-ordinators : Prof. Nandini K Kumar, Prof. Sucheta Banerjee Kurundkar, Prof. A. B. Ramteke

Lecture 1 - C1 - L00

Lecture 2 - C1 - Introduction Assorted Interviews

Lecture 3 - C1 - L01

Lecture 4 - C1 - L02

Lecture 5 - C1 - L03

Lecture 6 - C1 - L04

Lecture 7 - C1 - L05

Lecture 8 - C1 - L06

Lecture 9 - C1 - L07

Lecture 10 - C1 - L08

Lecture 11 - C1 - L09

Lecture 12 - C1 - L10A

Lecture 13 - C1 - L10B

NPTEL : NOC:Regulatory Requirements for Medical Devices and IVD kits in India (Multi-Disciplinary)

Co-ordinators : Prof. A. B. Ramteke, Prof. Malay Mitra

Lecture 1 - C2 - Introduction Assorted Interviews

Lecture 2 - C2 - L00

Lecture 3 - C2 - L01

Lecture 4 - C2 - L02

Lecture 5 - C2 - L03

Lecture 6 - C2 - L04

Lecture 7 - C2 - L05

Lecture 8 - C2 - L06

Lecture 9 - C2 - L07

Lecture 10 - C2 - L08

Lecture 11 - C2 - L09

NPTEL : NOC:Numerical Methods for Engineers (Multi-Disciplinary)

Co-ordinators : Dr. Niket S.Kaisare

- Lecture 1 - Introduction
- Lecture 2 - Overview of Learning Modules
- Lecture 3 - Course Plan
- Lecture 4 - Tutorial: Excel
- Lecture 5 - Errors and Approximations
- Lecture 6 - Truncation and Round-Off Errors
- Lecture 7 - Binary Numbers: Introduction
- Lecture 8 - Floating Point: Real numbers in decimal system
- Lecture 9 - Floating Point in Binary system
- Lecture 10 - Iterative Method
- Lecture 11 - Direct Method
- Lecture 12 - Sequential Method
- Lecture 13 - Linear Algebra: Basics
- Lecture 14 - Introduction to Linear Equations
- Lecture 15 - Rank Condition for Solving Linear Equations
- Lecture 16 - Motivating Gauss Elimination
- Lecture 17 - Gauss Elimination
- Lecture 18 - Tutorial Recap: Gauss Elimination
- Lecture 19 - Back Substitution to find solution
- Lecture 20 - Gauss Jordan and LU Decomposition
- Lecture 21 - Partial Pivoting in Gauss Elimination
- Lecture 22 - Analysis of Gauss Elimination
- Lecture 23 - Tri-Diagonal Systems: Practical Relevance
- Lecture 24 - Thomas Algorithm for Tri-Diagonal Systems
- Lecture 25 - Gauss Siedel Method
- Lecture 26 - Analysis of Gauss Siedel Method
- Lecture 27 - Gauss Siedel vs. Jacobi Methods
- Lecture 28 - Bonus: Example using MS Excel
- Lecture 29 - Summary: Linear Equations
- Lecture 30 - Introduction to Nonlinear Equations
- Lecture 31 - Bisection Method

- Lecture 32 - Analysis of Bisection Method
- Lecture 33 - Bonus: Excel Solution for Bisection Method
- Lecture 34 - Regula-Falsi Method
- Lecture 35 - Bonus: Excel Solution for Regula-Falsi Method
- Lecture 36 - Regula-Falsi vs. Secant Method
- Lecture 37 - Bonus: Excel Solution for Secant Method
- Lecture 38 - Some special cases
- Lecture 39 - Fixed-Point Iteration
- Lecture 40 - Newton-Raphson Method
- Lecture 41 - Analysis of Fixed-Point Iteration
- Lecture 42 - Analysis of Newton-Raphson
- Lecture 43 - Problems with Newton-Raphson
- Lecture 44 - Multi-Variable Fixed-Point Iteration
- Lecture 45 - Multi-Variable Newton-Raphson
- Lecture 46 - Out of Syllabus: Improvements to NR Methods
- Lecture 47 - Out of Syllabus: Roots of a polynomial
- Lecture 48 - Summary
- Lecture 49 - Introduction: Regression and Interpolation
- Lecture 50 - Linear Regression in One Variable
- Lecture 51 - Recap: Formula for Linear Regression
- Lecture 52 - Bonus: Linear Regression using MS-Excel
- Lecture 53 - Linear Regression in Multiple Variables
- Lecture 54 - Matrix Method for Multi-Linear Regression
- Lecture 55 - Polynomial Regression
- Lecture 56 - Functional Regression
- Lecture 57 - Bonus: X-Y versus Y-X data (Using MS Excel)
- Lecture 58 - Interpolation: Introduction and A Na^{ve} Extension
- Lecture 59 - Bonus: MS-Excel for Na^{ve} Interpolation
- Lecture 60 - Lagrange Interpolating Polynomials
- Lecture 61 - Newton's Forward Difference Polynomial
- Lecture 62 - Newton's Divided Differences: Derivation
- Lecture 63 - Interpolation Examples
- Lecture 64 - Bonus: MS-Excel for Newton's Polynomial

- Lecture 65 - Summary: Regression and Interpolation
- Lecture 66 - Numerical Differentiation: Introduction
- Lecture 67 - Numerical Differentiation Formula and Analysis
- Lecture 68 - Derivation using Method of undetermined coefficients
- Lecture 69 - Three-point differentiation formulae
- Lecture 70 - Bonus: Differentiation using MS-Excel
- Lecture 71 - Truncation vs. Round-Off Errors
- Lecture 72 - Numerical Differentiation Examples
- Lecture 73 - Summary of Numerical Differentiation
- Lecture 74 - Numerical Integration: Introduction
- Lecture 75 - Trapezoidal rule and Derivation
- Lecture 76 - Simpson's Rules for Integration
- Lecture 77 - Bonus: MS-Excel for Numerical Integration
- Lecture 78 - Error Analysis for Simpson's Rules
- Lecture 79 - Numerical Integration Examples
- Lecture 80 - Bonus: Integration using MS-Excel
- Lecture 81 - Summary of Newton Cotes Formulae
- Lecture 82 - Richardson's Extrapolation
- Lecture 83 - Gauss Quadrature
- Lecture 84 - Summary of Numerical Integration
- Lecture 85 - Introduction to ODE-IVP
- Lecture 86 - Motivation using an Example (Bonus)
- Lecture 87 - Euler's Methods and Second-Order Methods
- Lecture 88 - Second-Order Runge-Kutta Methods
- Lecture 89 - Summary of RK-2
- Lecture 90 - Higher order RK Methods
- Lecture 91 - Bonus: ODE-IVP using MS-Excel
- Lecture 92 - Bonus: RK-2 and RK-4 Methods using MS-Excel
- Lecture 93 - Summary and Recap
- Lecture 94 - Introduction to Predictor-Corrector Methods
- Lecture 95 - Stability of Implicit Methods: Overview
- Lecture 96 - Stability Analysis of Euler's Methods
- Lecture 97 - Extension to multiple variables

Lecture 98 - Local vs. Global Truncation Errors

Lecture 99 - Richardson's Extrapolation

Lecture 100 - Stiff System of ODEs: Introduction

Lecture 101 - Adaptive Step-sizing

Lecture 102 - Adaptive step-sizing and Embedded Methods

Lecture 103 - Bonus: Errors and Extrapolation using MS-Excel

Lecture 104 - Summary and Recap (Weeks 10 and 11)

Lecture 105 - Introduction to ODE-BVP

Lecture 106 - Shooting Method: An Overview

Lecture 107 - Finite Difference Method: An Overview

Lecture 108 - Solution using Shooting Method

Lecture 109 - Algorithm for Shooting Method

Lecture 110 - Problems with Shooting Method

Lecture 111 - Solving ODE-BVP using Finite Difference Method

Lecture 112 - Microsoft Excel based Solution

Lecture 113 - Recap of Week-12 (ODE-BVP)

NPTEL : Basic Course in Biomedical Research (Multi-Disciplinary)

Co-ordinators : Dr. Sanjay Mehendale

- Lecture 1 - Introduction to health research
- Lecture 2 - Formulating research question
- Lecture 3 - Literature review
- Lecture 4 - Measures of disease frequency
- Lecture 5 - Descriptive study designs
- Lecture 6 - Analytical study designs
- Lecture 7 - Experimental study designs: Clinical trials
- Lecture 8 - Validity of epidemiological studies
- Lecture 9 - Qualitative research methods: An overview
- Lecture 10 - Measurement of study variables
- Lecture 11 - Sampling methods
- Lecture 12 - Calculating sample size and power
- Lecture 13 - Selection of study population
- Lecture 14 - Study plan and project management
- Lecture 15 - Designing data collection tools
- Lecture 16 - Principles of data collection
- Lecture 17 - Data management
- Lecture 18 - Overview of data analysis
- Lecture 19 - Ethical framework for health research
- Lecture 20 - Conducting clinical trails
- Lecture 21 - Preparing a concept paper for research projects
- Lecture 22 - Elements of a protocol for research studies

NPTEL : NOC:Teaching and Learning in Engineering (TALE) (Multi-Disciplinary)

Co-ordinators : Prof. N.J. Rao

Lecture 1 - Overview of TALE and Good Engineer

Lecture 2 - Education and Teaching

Lecture 3 - Learning, Instruction and Assessment

Lecture 4 - What is OBE?

Lecture 5 - Accreditation

Lecture 6 - Outcomes

Lecture 7 - Program Outcomes - 1

Lecture 8 - Program Outcomes - 2

Lecture 9 - Taxonomy of Learning

Lecture 10 - Cognitive Levels

Lecture 11 - General Categories of Knowledge

Lecture 12 - Metacognitive Knowledge

Lecture 13 - Vincenti Categories of Engineering Knowledge

Lecture 14 - Affective and Psychomotor Domains

Lecture 15 - Taxonomy Table

Lecture 16 - Course Outcomes - 1

Lecture 17 - Course Outcomes - 2

Lecture 18 - Course Outcomes - POs and PSOs

Lecture 19 - Attainment of COs

Lecture 20 - Attainment of POs and PSOs

NPTEL : NOC:Teaching and Learning in General Programs (Multi-Disciplinary)

Co-ordinators : Prof. N.J. Rao

Lecture 1 - Teaching and Learning in General Programs (TALG)

Lecture 2 - Education and Teaching

Lecture 3 - Learning, Assessment and Instruction

Lecture 4 - Outcome Based Education (OBE)

Lecture 5 - Accreditation

Lecture 6 - Program Outcomes

Lecture 7 - POs and PSOs

Lecture 8 - Taxonomy of Learning: Cognitive Levels - 1

Lecture 9 - Taxonomy of Learning: Cognitive Levels - 2

Lecture 10 - Taxonomy of Learning: Knowledge Categories

Lecture 11 - Taxonomy of Learning: Metacognitive Knowledge

Lecture 12 - Affective Domain

Lecture 13 - Psychomotor Domain

Lecture 14 - Taxonomy Tables

Lecture 15 - Course Outcomes - 1

Lecture 16 - Course Outcomes - 2

Lecture 17 - Tagging the Course Outcomes

Lecture 18 - Attainment of Course Outcomes

Lecture 19 - Attainment of POs and PSOs

NPTEL : NOC:TALE 2 - Course Design and Instruction of Engineering Courses (Multi-Disciplinary)

Co-ordinators : Prof K Rajani Kanth

Lecture 1 - Engineering Programs, NBA Accreditation and Engineering Courses

Lecture 2 - Course Design

Lecture 3 - ISD and ADDIE

Lecture 4 - Analysis Phase - 1

Lecture 5 - Analysis Phase - 2

Lecture 6 - Design Phase

Lecture 7 - Technology and Targets

Lecture 8 - Assessment Pattern and Assessment Instruments

Lecture 9 - Item Banks

Lecture 10 - Development Phase

Lecture 11 - Instruction Material and Learning Material

Lecture 12 - Implement Phase - 1

Lecture 13 - Implement Phase - 2

Lecture 14 - Evaluate Phase

Lecture 15 - Course Exit Survey

Lecture 16 - Evaluating Laboratories and Electives

Lecture 17 - Exit Surveys for Projects

Lecture 18 - Summary Feedback

Lecture 19 - Instruction: An Overview

Lecture 20 - Instructional Situations

Lecture 21 - How Brains Learn - 1

Lecture 22 - How Brains Learn - 2

Lecture 23 - How Brains Learn - 3

Lecture 24 - Instructional Components - 1

Lecture 25 - Instructional Components - 2

Lecture 26 - Merrill's Principles of Learning

Lecture 27 - ID based on Merrill's Principles

Lecture 28 - Direct Approach to Instruction

Lecture 29 - Project Based Approach to Instruction

Lecture 30 - Problem Based Approach to Instruction

Lecture 31 - Experiential Approach to Instruction

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[Lecture 32 - Simulation Approach to Instruction](#)

[Lecture 33 - Instruction for Design](#)

[Lecture 34 - Instruction for Metacognitive Learning](#)

[Lecture 35 - So, what should a teacher do?](#)