



**NATIONAL PROGRAMME ON  
TECHNOLOGY ENHANCED LEARNING**  
A JOINT INITIATIVE OF IITs & IISc

FUNDED BY  
MHRD, GOVERNMENT OF INDIA  
UNDER NMEICT



**NPTEL (National Programme on Technology Enhanced Learning)** is a joint initiative of the IITs and IISc. Through this initiative, we offer courses in **Engineering, Science & Humanities Streams..**

### **NPTEL Video Courses in Various Disciplines**

• <b>Aerospace Engineering</b> (21 Videos)	• <b>Biotechnology</b> (15 Videos)	• <b>Atmospheric Science</b> (3 Videos)
• <b>Chemical Engineering</b> (36 Videos)	• <b>Basic courses (Semesters I &amp; II)</b> (23 Videos)	• <b>Chemistry and Biochemistry</b> (21 Videos)
• <b>Civil Engineering</b> (49 Videos)	• <b>Mathematics</b> (34 Videos)	• <b>Computer Science and Engineering</b> (66 Videos)
• <b>Mechanical Engineering</b> (77 Videos)	• <b>Electrical Engineering</b> (45 Videos)	• <b>Metallurgy and Material Science</b> (22 Videos)
• <b>Electronics and Communication Engineering</b> (59 Videos)	• <b>Mining Engineering</b> (1 Video)	• <b>Engineering Design</b> (3 Videos)
• <b>Ocean Engineering</b> (22 Videos)	• <b>Nanotechnology</b> (2 Videos)	• <b>Physics</b> (22 Videos)
• <b>Textile Engineering</b> (2 Videos)	• <b>Humanities and Social Science</b> (66 Videos)	• <b>Management</b> (32 Videos)



# NPTEL

National Programme on Technology Enhanced Learning

NPTEL- Video Course List

## Electronics & Communication Engineering

1	Basic Electronics
2	Solid State Devices
3	Basic Electronics and Lab
4	Digital Circuits and Systems
5	Communication Engineering
6	Digital Signal Processing
7	VLSI Circuits
8	Transmission Lines and EM Waves
9	High Speed Devices and Circuits
10	Probability and Random Processes
11	Digital Image Processing
12	Adaptive Signal Processing
13	Digital Voice & Picture Communication
14	Wireless Communication
15	MEMS and Microsystems
16	Digital Communication
17	Electronics for Analog Signal Processing - I
18	Electronics for Analog Signal Processing - II
19	Digital Systems Design
20	VLSI Technology
21	Digital Computer Organization
22	Neural Networks and Applications
23	Broadband Networks: Concepts and Technology
24	Information Theory and Coding
25	Advanced Optical Communication
26	Adv. Digital Signal Processing - Multirate and wavelets
27	Advanced 3G and 4G Wireless Mobile Communications
28	Circuits for Analog System Design
29	Error Correcting Codes
30	Coding Theory
31	RF Integrated Circuits
32	VLSI Data Conversion Circuits
33	Signals and Systems
34	Semiconductor Device Modeling
35	Analog IC Design
36	ARM Based Development
37	Pattern Recognition
38	Pattern Recognition and Application
39	Digital Switching
40	Basic Electrical Circuits
41	Digital System design with PLDs and FPGAs
42	Embedded Software Testing
43	Linux Programming & Scripting
44	Advanced VLSI Design
45	Advanced Logic Synthesis
46	Analog Circuits and Systems 1
47	Probability and Random Variables/ Processes for Wireless Communications
48	Networks and Systems
49	Estimation for Wireless Communications - MIMO/ OFDM Cellular and Sensor Networks
50	Microwave Integrated Circuits
51	Principles of Modern CDMA/ MIMO/ OFDM Wireless Communications

52	Digital Circuits and Systems 2
53	Basic Electrical Circuits 2
54	CMOS Analog VLSI Design
55	Basic Tools of Microwave Engineering
56	Design and Simulation of DC-DC converters using open source tools
57	Audio System Engineering
58	Error control coding: An introduction to linear block code
59	Error Control Coding: An Introduction to Convolutional Codes
<b>Computer Science and Engineering</b>	
1	Artificial Intelligence
2	Introduction to Problem Solving and Programming
3	computer graphics
4	Principles of Programming Languages
5	Discrete Mathematical Structures
6	System Analysis and Design
7	Data Structures And Algorithms
8	Data Communication
9	Computer Networks
10	Internet Technology
11	Computer Architecture
12	Design and Analysis of Algorithms
13	Software Engineering
14	Database Design
15	Artificial Intelligence 2
16	Computer Organization
17	Computer Graphics(Intro.)
18	Theory of Automata, Formal Languages and Computation
19	Real Time Systems
20	Electronic Design Automation
21	Compiler Design
22	High Performance Computing
23	Programming and Data Structure
24	Cryptography and Network Security
25	High Performance Computer Architecture
26	Graph Theory
27	Computational Geometry
28	Logic for CS
29	Low Power VLSI Circuits & Systems
30	Natural Language Processing
31	Numerical Optimization
32	Performance Evaluation of Computer Systems
33	Theory of Computation
34	Parallel Algorithm
35	Computer Algorithms - 2
36	Biometrics
37	Storage Systems
38	Riemann Hypothesis and its Applications
39	Principles of Compiler Design
40	Introduction to Computer Graphics
41	Parallel Computing
42	Pattern Recognition
43	Artificial Intelligence-3
44	Combinatorics
45	Design Verification and Test of Digital VLSI Circuits
46	Functional Programming in Haskell
47	Programming, Data Structures and Algorithms
48	Programming and Data structures (PDS)
49	Model Checking

50	Introduction to programming in C
51	Computer Architecture - 2
52	Artificial Intelligence: Knowledge Representation and Reasoning
53	Virtual Reality
54	Compiler Design - II
55	Computer Architecture - 3
56	Information Security - II
57	Design and Analysis of Algorithms-2
58	Introduction to Machine Learning
59	Fundamentals of Database Systems
60	Introduction to Information Security I
61	Introduction to Operating Systems
62	Algorithms for Big Data
63	Introduction to Machine Learning-2
64	Programming, Data Structures and Algorithms in Python
65	Wireless Ad Hoc and Sensor Networks
66	Reinforcement Learning
<b>Electrical Engineering</b>	
1	Basic Electrical Technology
2	Circuit Theory
3	Electromagnetic Fields
4	Power Systems Analysis
5	Control Engineering
6	Power Systems Operation and Control
7	Power Electronics
8	Industrial Drives - Power Electronics
9	Embedded Systems
10	Intelligent Systems and Control
11	Industrial Automation and Control
12	Illumination Engineering
13	Industrial Instrumentation
14	Chaos, Fractals & Dynamic Systems
15	Energy Resources & Technology
16	Power System Generation, Transmission and Distribution (Encapsulated from earlier Video)
17	Networks Signals and Systems
18	Networks and Systems
19	Digital Integrated Circuits
20	Analog ICs
21	Digital Signal Processing
22	Control Engineering
23	Dynamics of Physical Systems
24	Estimation of Signals and Systems
25	Power System Dynamics
26	Power System Dynamics and Control
27	Advanced Electric Drives
28	High Voltage DC Transmission
29	An Introduction to Electronics Systems Packaging
30	Optimal Control
31	Electrical Machines -I
32	Advanced Control Systems
33	Modelling and Analysis of Electric Machines
34	Nonlinear Dynamical Systems
35	Power Electronics and Distributed Generation
36	Power System Analysis
37	Probability Foundation for Electrical Engineers
38	Switched Mode Power Conversion
39	Pulse width Modulation for Power Electronic Converters

40	Fabrication of Silicon VLSI Circuits using the MOS technology
41	Analog Circuits
42	Electromagnetic theory-2
43	Industrial Automation and Control - II
44	Introduction to Non Linear Dynamics
45	Computational Electromagnetics & Applications
<b>Basic Courses (Sem I &amp; II)</b>	
1	Physics I - Oscillations & Waves
2	Engineering Mechanics
3	Basic Electronics
4	Basic Electronics and Lab
5	Mathematics I
6	Numerical Analysis and Computer Programming
7	Concept of Management and Evolution of Management thought
8	Quantum Physics
9	Engineering Chemistry I
10	Engineering Physics II
11	Basic Electronic Lab
12	Classical Physics
13	Strategic Management
14	Leadership
15	Management Information System
16	Mathematics II
17	Mathematics III
18	Numerical Methods and Computation
19	Applied Mechanics
20	Human Resource Management-I
21	Management Science I
22	Material Science
23	Numerical Methods and Computation
<b>Mechanical Engineering</b>	
1	Strength of Materials(mech Engg)
2	Mechanical Measurements and Metrology
3	Advanced Strength of Materials
4	Kinematics of Machines
5	Design of Machine Elements I
6	Manufacturing Processes II
7	Heat and Mass Transfer
8	Project and Production Management
9	Refrigeration and Air Conditioning
10	Computer Aided Design and Manufacturing
11	Robotics
12	Finite Element Method
13	Introduction to Finite Element Method
14	Principles of Mechanical Measurements
15	Fundamentals of Operations Research
16	Dynamics of Machines
17	Rocket Propulsion
18	Advanced Finite Elements Analysis
19	Advanced Operations Research
20	Basic Thermodynamics
21	Manufacturing Processes I
22	Industrial Engineering
23	Experimental Stress Analysis
24	Engineering Mechanics
25	Mechanical Vibrations
26	Advanced Gas Dynamics
27	Advanced Machining Processes

28	Biomicroelectromechanical Systems
29	Computational Fluid Dynamics
30	Computer Aided Engineering Design
31	Conduction And Radiation
32	Micro and Smart Systems
33	Convective Heat and Mass Transfer
34	Mathematical Methods in Engineering and Science
35	Cryogenic Engineering
36	Design and Optimization of Energy systems
37	Engineering Fracture Mechanics
38	Welding Engineering
39	Spray Theory and Applications
40	Acoustics
41	Advanced Manufacturing Processes
42	Nonlinear Vibration
43	Convective Heat Transfer
44	Advanced manufacturing process for micro system fabrication
45	Computational Fluid Dynamics
46	Computational Fluid Dynamics - II
47	Engineering Mechanics Statics and Dynamics
48	Fluid Mechanics
49	Fundamentals of Industrial Oil Hydraulics and Pneumatics
50	Gas Dynamics and Propulsion
51	Introduction to Explosions and Explosion Safety
52	Introduction to Fluid Mechanics and Fluid Engineering
53	Introduction to Fluid Machines and Compressible Flow
54	BioMEMS and Microsystems
55	Micro fluidics.1
56	Microfluidics.2
57	Manufacturing Systems Technology Part I
58	Machinery fault diagnosis and signal processing
59	Manufacturing systems technology part II
60	Foundation of Computational Fluid Dynamics
61	Basics of Noise and Its Measurements
62	Experimental Stress Analysis:An Overview
63	Fundamentals of Gas Dynamics
64	Conduction and Convection Heat Transfer
65	Introduction to Boundary Layers
66	Basics of Finite Element Analysis
67	Vibrations of Structures-2
68	Manufacturing Process Technology -Part I
69	Processing of non metals
70	Engineering Drawing
71	Theory & Practice of Rotor Dynamics
72	Vibration of Structures
73	Technology of Surface Coating
74	Tribology
75	Solar Energy Technology
76	Vibration control
77	Refrigeration and air-conditioning-2
<b>Civil Engineering</b>	
1	Strength of Materials
2	Fluid Mechanics
3	Surveying
4	Engineering Geology
5	Civil Engineering - Building materials and Construction
6	Introduction to Transportation Engineering
7	Structural Analysis II

8	Pre-stressed Concrete Structures
9	Environmental Air Pollution
10	Transportation Engineering II
11	Water Resources Engineering
12	Water and Waste Water Engineering
13	Soil Mechanics
14	Mechanics of solids
15	Advanced Structural Analysis
16	Design of Steel Structures
17	Hydraulics
18	Modern Surveying Techniques
19	Design of Reinforced Concrete Structures
20	Urban transportation planning
21	Stochastic Hydrology
22	Advanced Hydraulics
23	Advanced Hydrology
24	Finite Element Analysis
25	Numerical Methods in Civil Engineering
26	Probability Methods in Civil Engineering
27	Soil Dynamics
28	Stochastic Structural Dynamics
29	Structural Dynamics
30	Water Resources Systems : Modeling Techniques and Analysis
31	Watershed Management
32	Application of Soil Mechanics
33	Concrete Technology
34	Concrete Engineering and Technology
35	Foundation Engineering
36	Modern Construction Materials
37	Advanced Foundation Engineering
38	Geosynthetics and Reinforced Soil Structures
39	Geosynthetics Engineering: In Theory and Practice
40	Geotechnical Earthquake Engineering
41	Geotechnical Measurements & Explorations
42	Ground Improvement Techniques
43	Ground Water Hydrology
44	Sustainable River Basin Management
45	Seismic Analysis of Structures
46	Project Planning & Control
47	Engineering Graphics
48	Geology and Soil Mechanics
49	Advanced Geotechnical Engineering
<b>Ocean Engineering</b>	
1	Performance of Marine Vehicles at Sea
2	Strength and Vibration of Marine Structures
3	Applied Thermodynamics for Marine Systems
4	Hydrostatics and Stability
5	Seakeeping & Manoeuvring
6	Marine Construction and Welding
7	Elements of Ocean Engineering
8	Marine Hydrodynamics
9	Advanced Marine Structures
10	Coastal Engineering
11	Design of Offshore Structures
12	Dynamics of Ocean Structures
13	Health,Safety and Environmental Management in Petroleum and Offshore Engineering
14	Ocean Structures and Materials



15	Ship Resistance and Propulsion
16	Port and Harbour Structures
17	Foundation for Offshore Structures
18	Dynamics of Ocean Structures-2
19	Health, Safety and Environmental Management in Offshore and Petroleum Engineering_2
20	Wave Hydrodynamics
21	HSE for offshore and petroleum engineers-Practices
22	Risk and Reliability of offshore structures
<b>Biotechnology</b>	
1	BioChemistry I
2	Enzyme Science and Engineering
3	Thermodynamics
4	Bio electricity
5	Downstream Processing
6	Animal Physiology
7	Analytical Technologies in Biotechnology
8	Proteins and Gel-Based Proteomics
9	Mass spectrometry based proteomics
10	Principles of Downstream techniques in Bioprocess
11	Human Molecular Genetics
12	Biostatistics and Design of Experiments
13	Bioreactors
14	Biomathematics
15	Introduction to Biostatistics
<b>Mining Engineering</b>	
1	Fundamentals of Environmental Pollution and Control
<b>Metallurgy Engineering</b>	
1	Advanced Materials and Processes
2	Fuels Refractory and Furnaces
3	Introduction to Biomaterials
4	Advanced Metallurgical Thermodynamics
5	Electroceramics
6	Materials and Energy balance in Metallurgical Processes
7	Steel Making
8	Physics of Materials
9	Principles of Physical Metallurgy
10	Structure of Materials
11	Science and Technology of Polymers
12	Environmental Degradation of Materials
13	Optoelectronic Materials and Devices
14	Electronic materials, devices, and fabrication
15	Processing of Semiconducting Materials
16	Non-ferrous Extractive Metallurgy
17	Phase Diagrams in Materials Science and Engineering
18	Fundamentals of optical and scanning electron microscopy
19	Fundamentals of electronic materials and devices
20	Introduction to Reciprocal Space and its use in Solids
21	Analysis and Modeling of Welding
22	Advanced ceramics for strategic applications
<b>Aerospace Engineering</b>	
1	Turbomachinery Aerodynamics
2	Space Flight Mechanics
3	Advanced Control System Design for Aerospace Vehicles
4	Flight Dynamics II (Stability)
5	Jet Aircraft Propulsion
6	Aero elasticity



7	Instability and Transition of Fluid Flows
8	Introduction to Helicopter Aerodynamics and Dynamics
9	Foundation of Scientific Computing
10	Acoustic Instabilities in Aerospace Propulsion
11	Aerospace Propulsion
12	Gas Dynamics
13	High Speed Aero Dynamics
14	Introduction to Aerodynamics
15	Introduction to Propulsion
16	Stability and control of aircraft
17	Introduction to airplane performance
18	Introduction to CFD
19	Introduction to Aerospace Propulsion
20	Jet and Rocket Propulsion
21	Optimal Control, Guidance and Estimation
<b>Chemical Engineering</b>	
1	Applied Mechanics
2	Particle Characterization (PG)
3	Novel Separation Processes
4	Chemical Reaction Engineering
5	Heat Transfer
6	Mass Transfer II
7	Modern Instrumental Methods of Analysis
8	Process Control and Instrumentation
9	Plantwide Control of Chemical Processes
10	Computational Techniques
11	Computational Fluid Dynamics
12	Advanced Mathematical Techniques in Chemical Engineering
13	Statistics for Experimentalists
14	Fluid Mechanics
15	Fundamentals of Transport Processes
16	Fundamentals of Transport Processes - II
17	Multiphase Flow
18	Chemical Technology - I
19	Chemical Engineering Thermodynamics
20	Advanced Process Control
21	Process Integration
22	Mass Transfer Operations I
23	Chemical Reaction Engineering II
24	Process Design Decisions and Project Economics
25	Microscale Transport Processes
26	Advanced Chemical Reaction Engineering (PG)
27	MATLAB Programming for Numerical Computation
28	Biochemical Engineering
29	Chemical Engineering Principles of CVD Processes
30	Introduction to Statistical Hypothesis Testing
31	Introduction to Process Modeling in Membrane Separation Process
32	Computational Fluid Dynamics 2
33	Advanced Numerical Analysis
34	Heterogeneous Catalysis and Catalytic Processes
35	Adiabatic Two-Phase Flow and Flow Boiling in Microchannel
36	Instability and Patterning of Thin Polymer Films
<b>Management</b>	
1	Six Sigma
2	Strategic Management
3	Organisation Management
4	Operations and Supply Chain Management
5	Security Analysis and Portfolio Management

6	Econometric Modelling
7	Novel Separation Processes
8	Manufacturing Systems Management
9	Managerial Economics
10	International Business Communication
11	Organizational Behaviour
12	Organisation Management
13	Strategic Marketing - Contemporary Issues
14	Consumer Behaviour
15	Organisation of Engineering Systems and Human Resources Management
16	Managerial Accounting
17	International Finance
18	Infrastructure Finance
19	Global Supply Chain Management
20	Applied Multivariate Statistical Modeling
21	Economics / Management / Entrepreneurship
22	Business Analysis for Engineers
23	Introduction to Data Analytics
24	Introduction to Operations Research
25	Managing Services
26	Marketing Management-I
27	Principles of Human Resource Management
28	Quantitative Finance
29	An Introduction to game Theory
30	Project Management
31	Commodity Derivatives and Risk Management
32	Marketing Management - II
<b>Mathematics</b>	
1	Advanced Matrix Theory and Linear Algebra for Engineers
2	Applied Multivariate Analysis
3	Calculus of Variations and Integral Equations
4	Elementary Numerical Analysis
5	Functional Analysis
6	Linear programming and Extensions
7	Measure and Integration
8	Probability and Statistics
9	Regression Analysis
10	Mathematical Logic
11	Basic Calculus for Engineers, Scientists and Economists
12	Statistical Methods for Scientists and Engineers
13	Advanced Engineering Mathematics
14	Statistical Inference
15	Complex Analysis
16	Stochastic Processes
17	Real Analysis
18	Convex Optimization
19	Numerical methods of Ordinary and Partial Differential Equations
20	A Basic Course in Real Analysis
21	Formal Languages and Automata Theory
22	Foundations of Optimization
23	An Introduction to Riemann Surfaces and Algebraic Curves: Complex 1-Tori and Elliptic Curves
24	Probability Theory and Applications
25	Linear Algebra
26	Discrete Mathematics
27	Ordinary Differential Equations and Applications
28	Probability and Stochastics for finance
29	Differential Calculus in Several Variables

30	Partial Differential Equations (PDE) for Engineers: Solution by Separation of Variables
31	Probability and Statistics 2
32	Applied Multivariate Statistical Modeling-2
33	Discrete Mathematics-2
34	Advanced Complex Analysis - Part 1:Zeros of Analytic Functions,Analytic continuation, Monodromy, Hyperbolic Geometry and the Reimann Mapping Theorem
<b>Physics</b>	
1	Special Topics in Classical Mechanics
2	Relativistic Quantum Mechanics
3	Quantum Mechanics and Applications
4	Quantum Electronics
5	Nuclear Physics: Fundamentals and Applications
6	Electronics
7	Astrophysics & Cosmology
8	Physical Applications of Stochastic Processes
9	Condensed Matter Physics
10	Classical Field Theory
11	Electromagnetic Theory
12	Quantum Mechanics I
13	Quantum Field Theory
14	Selected Topics in Mathematical Physics
15	Special Theory of Relativity
16	Semiconductor Optoelectronics
17	Plasma Physics: Fundamentals and Applications
18	Special/Select Topics in Atomic Physics
19	Topics in Nonlinear Dynamics
20	Special/Select Topics in the Theory of Atomic Collisions and Spectroscopy
21	Mechanics, heat oscillations and waves
22	Introduction to Electromagnetism
<b>Humanities and Social Sciences</b>	
1	Contemporary Literature
2	Game Theory and Economics
3	History of Economic Theory
4	Indian Philosophy
5	Population and Society
6	Better Spoken English
7	English Language and Literature
8	Communication Skills
9	Language and society
10	Language and Mind
11	Infrastructure Economics
12	Literary Theory and Literary Criticism
13	Elements of Visual Representation
14	Human Adjustment Processes
15	Money & Banking
16	Macro Economics
17	Understanding Creativity and Creative Writing
18	Introduction to Sociology
19	International Economics
20	Contemporary Issues in Philosophy of Mind & Cognition
21	Introduction to Film Studies
22	Cultural Studies
23	Aspects of Western Philosophy
24	Introduction to Modern Linguistics
25	Introduction to Logic
26	Brief introduction to Psychology

27	Psychiatry:An overview
28	Issues in Bioethics
29	Film Appreciation
30	Practical English: Learning and Teaching
31	Health Research Fundamentals
32	Legal Compliance for Incorporating Startup
33	Appreciating carnatic music
34	Technology Transfer through Joint Venture
35	Technical English for Engineers
36	Time value of money-Concepts and Calculations
37	How the Brain Creates Mind
38	Introduction to Psychology
39	Selected Topics in Psychology
40	Ethics
41	American Literature & Culture
42	Applied Linguistics
43	Basic Concepts of Modal Logic
44	Depreciation, Alternate Investment and Profitability Analysis
45	Digital Human Modeling and Simulation for Virtual Ergonomics Evaluation
46	Economics of IPR
47	Emotional Intelligence
48	English Language for Competitive Exams
49	Enhancing Soft Skills and Personality
50	Great Experiments in Psychology
51	Folk and Minor Art in India
52	Globalization and Culture
53	Introducing Modern Western Art: Movements and Artists
54	Introduction to Indian Art - An appreciation
55	Principles and Parameters in Natural Language
56	Understanding Design Thinking & People Centred Design
57	The Renaissance and Shakespeare
58	Symbolic Logic
59	Soft Skill Development
60	Postcolonial Literature
61	Introduction on Intellectual Property to Engineers and Technologists
62	Developing Soft Skills and Personality
63	Ethics II
64	Probability and Stochastic for Finance II
65	Qualitative Research Methods
66	Speaking Effectively
<b>Engineering Design</b>	
1	Ergonomics for beginners: Industrial design perspective
2	Vehicle Dynamics
3	Principles of Engineering System Design
<b>Chemistry and Biochemistry</b>	
1	Eukaryotic Gene Expression - basics and benefits
2	Rate processes
3	Essentials in Immunolgy
4	Organic photochemistry and pericyclic reactions
5	Chemistry of Materials
6	Advance Analytical Course
7	Bio-inorganic chemistry
8	BioChemistry I
9	Heterocyclic Chemistry
10	Principles and Applications of Electron Paramagnetic Resonance Spectroscopy
11	Polymer Chemistry
12	Introduction to Organometallic Chemistry
13	Introductory Quantum Chemistry

14	Mathematics for Chemistry
15	Chemistry - II
16	Application of Spectroscopic Methods in Molecular Structure Determination
17	Co-ordination chemistry (chemistry of transition elements)
18	Atmospheric Science
19	The monsoon and its variability
20	Radiation Heat Transfer
21	Introduction to Atmospheric Science
<b>Textile Engineering</b>	
1	Natural Dyes
2	Theory of Yarn Structures
<b>Nanotechnology</b>	
1	Nano structured materials-synthesis, properties, self assembly and applications
2	Nanostructures and Nanomaterials: Characterization and Properties
<b>Agriculture</b>	
1	Basic Crop Production Practices (BCPP)
2	Integrated Pest Management (IPM)
3	GIS in Ag-Essentials and Applications (GIS)
4	Nutrition, Therapeutics and Health (NM)
5	ICT Basics
6	Weather Forecast in Agriculture and Agro-advisory (WF)