Lesson Plan

Name of Faculty: Davender Kumar

Discipline: Agriculture Engg.

Semester: 3rd

Subject: Soil & Water Conservation

Lesson Plan Duration: 15 weeks

Work load (lecture per week (in hours): Lecture: 04

Week	Theory	
	Lecture Day	Topic (including assignment/ test)
1st	1	Introduction to the soil as a natural body, definitions and fuctions of soil.
	2	Various constituents of soil and their importance.
	3	Soil as a medium of plant growth
	4	Soil separates and classifications (I. S. S. S. & U. S. D. A.)
2nd	1	Soil texture and classification of soil (U. S. D. A.).
	2	Soil structure; definition, types and factors affecting soil structure
	3	Bulk density and particle density of soils, Soil consistency
	4	Porosity & void ratio, Degree of saturation.
3rd	1	Soil moisture content (dry basis & wet basis)
	2	Method of soil moisture determination viz. gravimetric method. Retention of soil moisture
	3	Maximum retentive capacity, field capacity, permanent wilting percentage
	4	Hygroscopic coefficient. Soil moisture classifications
4th	1	Available water holding capacity of soil. Soil permeability; definition and importance.
	2	Darcy's law, Coefficient of permeability. Soil air and aeration
	3	Revision of previous doubts
	4	Introduction, Classification of erosion viz. Geological and accelerated
5th	1	Mechanics of Water Erosion: Raindrop erosion, Sheet erosion, Rill erosion
	2	Gully erosion and principle of gully erosion and Classification of gullies.
	3	Stream channel erosion. Effects of water erosion
	4	Factors affecting erosion by water.
6th	1	Mechanics of Wind Erosion: Processes of saltation, suspension
	2	Surface creep. Factors affecting erosion by wind.
	3	Principles of erosion control
	4	Agronomical measures: Agronomic and field practices to control erosion by wind and water i.e. Contour farming, strip cropping, tillage etc.
7th	1	Revision of previous doubts.
	2	Mechanical measures: Terracing to control erosion by water.
	3	Types of terraces. Terrace design parameters and planning a terrace system.
	4	Bench terraces, types and design parameters

8th	1	Use of bunds to control erosion and design parameters of bunds. Contour bunding.
	2	Vegetated water ways for the control of erosion
	3	Temporary structures for the control of gully erosion, their types and adaptability
	4	Permanent soil conservation structures viz. Drop spillway,
9th	1	Chute spillway, Drop inlet spillway for the control of erosion;
	2	their principles, adaptability, constructional features and material of construction.
	3	Introduction to the farm ponds, earthen embankments and water harvesting in relation to soil and water conservation,
	4	Soil conservation through tree and grass cultivation,
10th	1	Ground water recharge, watershed management
	2	Need, Importance and scope of water harvesting,
	3	Types and Methods of water harvesting. Brief description of the different systems of water harvesting and storage.
	4	Saline, alkaline and acid soils, Reasons and factors of their formation.
11th	1	Chemical Properties: Soil reaction (pH), Electrical Conductivity (EC
	2	Cation Exchange Capacity (CEC), Sodium Adsorption Ratio (SAR),
	3	Exchangeable Sodium Percentage (ESP), Salt concentration in the soils.
	4	Effect of salinity, alkalinity and acidity on plant growth.
12th	1	Reclamation of these soils and their management.
	2	Revision of previous doubts.
	3	Water logging, causes of water logging and its effects.
	4	Drainage. Types of drainage systems viz. surface and subsurface drainage
13th	1	Introduction to drainage investigation. Benefits of drainage
	2	Drainage properties of soil. Drainage coefficient.
	3	Surface drainage-functional components
	4	types (random drain, parallel field drain, parallel open ditch and bedding system used in flat areas and cross slope ditch system used in sloping areas).
14th	1	Benefits of subsurface drainage. Introduction to investigations for subsurface drainage,
	2	Different method of subsurface drainage viz. tile drains, mole drains
	3	Drainage wells, deep open drains and combination of tile and opened drains.
	4	Revision of previous doubts.
15th	1	Waterlogged soils are health hazard
	2	salt affected soils create impermeability, long term effects
	3	Revision
	4	Revision