AENGG-121 Soil and Water Conservation Engineering 2(1+1)

Theory

Introduction to Soil and Water Conservation, Causes of soil erosion. Definition and agents of soil erosion, Water erosion: Forms of water erosion. Gully classification and control measures. Soil loss estimation by universal Soil Loss Equation. Introduction to contouring, strip cropping. contour bund. graded bund and bench terracing. Grass water ways. Water harvesting and its techniques. Wind erosion - principle of wind erosion control and its control measures. Familiarization with centrifugal pumps, measurement of irrigation water, water conveyance system and familiarization with pressurized irrigation methods.

Practical

General status of soil conservation in India and Rajasthan. Calculation of erosion index. Estimation of soil loss. Measurement of soil loss. Preparation of contour maps. Design of contour bunds. Design of graded bunds. Problem on wind erosion. Numerical problems on friction head, velocity head, total head and horse power calculation of pumps. Measurement of irrigation water in the field by different methods and related numerical. Study of components of drip and sprinkler system. Study of watershed area.

Lecture schedule: Theory

S.N.	Topic	No. of lectures
1.	Introduction to Soil and Water Conservation and causes of soil erosion	1
2.	Definition and agents of soil erosion and water erosion	1
3.	Forms of soil erosion-rain drop, sheet, rill and gully erosion: factor affecting soil erosion.	1
4.	Gully classification and control measures.	1
5.	Soil loss estimation by universal Soil Loss Equation.	1
6.	Principles of erosion control: Introduction to contouring, strip cropping. Contour bund. Graded bund and bench terracing. Grassed water ways.	2
7.	Water harvesting and its techniques.	1
8.	Wind erosion- principle of wind erosion and its control measures	1
9.	Centrifugal pumps- volute and diffuser types; Principle of operation of centrifugal pumps.	1

10.	Pump related terms- capacity, suction lifts, suction head, discharge head, friction head, pressure head, total head, velocity head, net positive suction head, maximum practical suction lift of pumps, water horsepower, shaft horse power, pump efficiency, brake horse power.	2
11.	Measurement of irrigation water- volume method, velocity- area method, water meter, weirs- rectangular, cipolletti, 90 ^{o} v- notch.	2
12.	Drip irrigation method- Adoptability, limitation, components and layout.	1
13.	Sprinkler irrigation method- adoptability, limitations, types, components and layout.	1

Lecture schedule: Practical

S.N.	Topic	No. of lectures
1	General status of soil conservation in India and Rajasthan	1
2	Calculation of erosion index	1
3	Estimation of soil loss.	2
4	Preparation of contour maps	2
5	Numericals on design of contour bunds	2
6	Numerical problems on friction head, velocity head, total head and horse power calculation of pumps.	2
7	Measurement of irrigation water in the field by different methods and related numericals.	2
8	Study of different components of drip irrigation system	1
9	Study of different components of sprinkler irrigation system	1
10	Visit to nearby watersheds	2