

SYLLABUS

Theory Syllabus Total 60 hours

Section I

Unit - I What is irrigation

10 Hrs

1. Introduction and Definition
2. Types of irrigation: Sprinkler, Drip and Rain pipe.
3. Irrigation System necessities.

Unit-II Drip Irrigation

10 Hrs.

1. Drip irrigation: Introduction, merits/demerits, types, components of drip system, Emitter design and selection, design of lateral, sub-main, main and pump.
2. Maintenance of drip system.
3. Economic importance of drip & sprinkler irrigation.
4. Major and medium irrigation scheme of govt. of India.

Unit- III Uniformity and Efficiency

10 Hrs.

1. Moisture distribution Patterns and uniformity of coverage and coefficient.
2. Automation of micro-irrigation system - Time based, Volume based, Sensor based

Section II

Unit - I Sprinkler Irrigation

10 Hrs.

1. Introduction, Problems and Prospectus, Adaptability, limitations, types of systems,
2. Components of irrigation systems: pipes tubes and fittings, nozzles, solenoid valves, controllers (timer, tensiometer, VPD)
3. Fertigation systems: Injectors and plumbing; Controlling EC, pH and pathogens.
4. Layout of sprinkler system, sprinkler selection and spacing, capacity of the sprinkler system, Pressure requirement and power units for sprinkler system.
5. Operation and maintenance of sprinkler, cost economics.

Unit - II Automations in irrigation

10 Hrs.

1. Automation valves and their applications, Types of automation controllers and their applications, Sensors used for automation.



2. Automated irrigations controllers: Timers, RH(Relative Humidity), VPD (Vapor Pressure Deficit) sensors; On/off control mechanisms.
3. Principles of general electrical wiring , installing and maintaining Solenoid Valves.

Unit – III Centrifugal pump

10 Hrs.

1. Classification of variable displacement pumps, principles of operation of centrifugal pumps, classification of centrifugal pump.
2. Pump performance: Effect of change of speed on head, capacity, power and efficiency
Effect of change of impeller diameter on head, capacity, power and efficiency System head curve.

PRACTICAL SYLLABUS

Total 140

Hours

1. Study of pressure gauges.
2. Installation and testing of centrifugal pump.
3. Study of different components of sprinkler irrigation system
4. Design and installation of sprinkler irrigation system.
5. Study of different components of drip irrigation system
6. Design and installation of drip irrigation system.
7. Study of different types of filters and determination of filtration efficiency.
8. Field visit to micro irrigation system and evaluation of drip system.
9. Basics of computer - Turn on and Turn off
10. Installing Solenoid valves to Main and sub lines
11. Scheduling of irrigation using Timers.
12. Determination of EC & pH of irrigating water
13. Determination of precipitation pattern , discharge & uniformity coefficient.
14. Measuring soil moisture with pressure plate apparatus
16. Calculations on irrigation Efficiency.
17. System layout of sprinkler irrigation system



18. Operating of sprinkler irrigation system
19. System layout of drip irrigation system
20. Operating of drip irrigation system.
21. Water analysis.

TRAINING OUTCOMES

1. Students/ farmers can assemble their own irrigation technique in there farms.
2. Learn about the various parts of sprinkler & drip irrigation.
3. Students/ farmers by using drip irrigation in their farms to can increase the product growth.
4. Br aware about the business opportunities & employment in sprinkler & drip irrigation.
5. To improve crop production.
6. Save water and save time.

REFERENCES

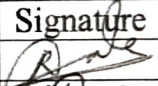


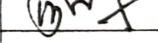
1. A.M.Michael and S.D.Khepar "Water well and pump engineering" (9th Edition, 2005) Tata McGraw-Hill publishing Company Ltd. New Delhi
2. Mane M.S. and Ayare B.L. "Principles of Sprinkler Irrigation systems", Second Edition , Jain Brothers, New Delhi
3. Mane M.S and Ayare B.L. and Magar S.S. Principles of Drip Irrigation Systems, Third Edition Jain Brothers, New Delhi
4. Michael AM, Shrimohan and KR Swaminathan Design and Evaluation of Irrigation Methods, (IARI Monograph No.1) Water Technology Centre, IARI New Delhi
5. D. karmelli, G. Peri. M.Todes Irrigation systems: design and operation Oxford University Press, Capetown 1985



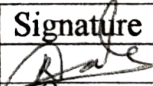
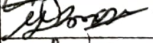
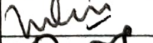

Reference Books:

Sr. No.	Reference book name	Author	Publication
1	Landscape Irrigation: Design and Management	Stephen W. Smith	Wiley; 1st edition (November 7, 1996)
2	Drip and Sprinkler Irrigation	Biswas Ranajit Kumar	New India Publishing Agency
3	Sprinklers & Watering Systems	Scotts	Scotts (January 1, 2005)
4	Sprinkler Irrigation	Sivanappan R K	Oxford & Ibh Publishing
5	Irrigation Water Management	Dilip Kumar Mujawar	PHI Learning

Board of Studies:


Sr. No.	Name	Place	Post	Signature
1	Miss. P. R Nale	Dahiwadi College Dahiwadi	Coordinator	
2	Mr. D. S. More.	Dahiwadi College Dahiwadi	Member	
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