

# 21AGRO204 IRRIGATION AND WATER MANAGEMENT

Hours Per Week :

L	T	P	C
1	-	2	2

Total Hours :

L	T	P
15	-	30



Source :

<https://images.app.goo.gl/pNUcxQv nf2X9EfHbA>

## COURSE DESCRIPTION AND OBJECTIVES:

This course is aimed to provide an understanding about the water requirement of crops under diverse agro-ecological environments and develop and promote efficient irrigation systems which are economical with high water use efficiency

## COURSE OUTCOMES:

Upon completion of the course, the student will be able to achieve the following outcomes:

COs	Course Outcomes
1	Acquire skills to estimate the water requirement of crops under diverse agro-ecological environments and develop efficient irrigation systems
2	Able to evaluate the performance and recommend efficient systems which are economical and have higher water use efficiency

## SKILLS:

- ✓ *Determination of field capacity and wilting point*
- ✓ *Design of underground pipeline system*
- ✓ *Estimation and evaluation of various irrigation efficiencies, border furrow, check basin irrigation method*

**ACTIVITIES:**

- o *Estimation of bulk density and particle density*
- o *Calculate scheduling of irrigation by IW/ CPE ratio*
- o *Quantification of soil moisture by using different methods*
- o *Demonstration of drip and sprinkler irrigation*
- o *Visit to Micro Irrigation systems in farmers field and observe the water management practices in different crops*

**UNIT - 1**

**Irrigation** :Definition and objectives; Water resources, Irrigation projects (major, medium & minor) in India and Andhra Pradesh

**UNIT - 2**

**Soil-water relations:** Soil - plant - water relationships; Methods of soil moisture estimation; Evapotranspiration and Crop water requirement Duty of water; Conjunctive use of water

**UNIT - 3**

**Scheduling of irrigation:** Methods of irrigation - Surface, Subsurface, Sprinkler and Drip irrigation, Hose reels (Travelling Gun systems or Rain gun on wheels) Different approaches for scheduling irrigation (IW/CPE, critical stages etc)

**UNIT - 4**

**Quality of irrigation water:** Salinity hazard, sodium hazard, residual sodium carbonate and boron toxicity – criteria and threshold limits – management practices for using poor quality water

**UNIT - 5**

**Water logging:** causes for water logging – drainage- surface and sub-surface drainage systems – relative merits

**LABORATORY EXPERIMENTS****LIST OF EXPERIMENTS**

1. Water use efficiency, calculation of irrigation water management practices in different crops. Determination of bulk density
2. Determination of soil moisture content by gravimetric and volumetric method
3. Installation and working with tensiometer and resistance blocks
4. Determination of infiltration rate and field capacity by field method
5. Measurement of soil moisture content by moisture probe
6. Measurement of irrigation water through flumes, weirs and V notches
7. Scheduling of irrigation by IW / CPE ratio method, Handling of Irrigation equipment
8. Calculation of irrigation water requirements
9. Layout of surface irrigation methods
10. Problems on duty of water and irrigation efficiencies
11. Demonstration of drip irrigation system (filter cleaning, flushing of laterals and fertigation)
12. Demonstration of operation of sprinkler irrigation system
13. Visit to micro irrigation systems in farmers fields.
14. Water management practices in rice, wheat and maize
15. Water management practices in groundnut, sunflower and sugarcane

**REFERENCES:**

1. Michael, A.M. 2006. Irrigation – Theory and Practice. Vikas Publishing House Pvt. Ltd., New Delhi.
2. Reddy, S.R. 2016. Irrigation Agronomy 3<sup>rd</sup> Edition. Kalyani Publishers, Ludhiana.
3. Sankara Reddi, G.H. and Yellamanda Reddy, T. 2006. Efficient Use of Irrigation Water. Kalyani Publishers, Ludhiana.
4. Majumdar, D.K. 2013. Irrigation water management: Principles and practices. PHI learning Pvt Ltd, Delhi-92