

19AG213 IRRIGATION ENGINEERING

Hours Per Week :

L	T	P	C
2	0	2	3

Total Hours :

L	T	P	W/RA	SSH/SHS	CS	SA	S	BS
30	-	30	10	45	-	-	-	-



Source :

https://www.imgc.nl/wp-content/uploads/2017/03/52de913ab63e72c42d000002_54176946_x.jpg?swifty=1

COURSE DESCRIPTION AND OBJECTIVES:

To acquaint and equip the students with the basic principles of soil-plant water relations and their interactions and to develop competency to design water conveyance systems and surface irrigation systems in the field.

COURSE OUTCOMES:

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

COs	Course Outcomes	POs
1	Apply their knowledge on measurement of irrigation flow quantities and location specific on-farm water management strategies in agriculture for increasing yields through water use efficiencies and reducing cost of cultivation.	1
2	Analyse the problems faced by the farmers in irrigated agriculture in view of allocation and distribution of water to the various crops in various seasons.	2
3	Evaluate the trend and current scenario of investments and returns on irrigation sector in tune of local and global approach.	4
4	Create and development of new irrigation schemes, projects and structures for various crops in agriculture, horticulture and sericulture.	3
5	Create and take up the various projects on the present research gaps in irrigation sector to promote and address the demands and needs of the farming community.	3
6	Understand and manifest the scientific and technical aptitude and attitude of irrigation engineering at individual capacity and also with a team work approach for over all development of farmers in Indian agriculture.	9

SKILLS:

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

- UNIT - I** **L-6**
Major and medium irrigation schemes of India: Purpose of irrigation, environmental impact of irrigation projects, source of irrigation water, present status of development and utilization of different water resources of the country.
- UNIT - II** **L-6**
Measurement of irrigation water: Weir, flumes and orifices and other methods; open channel water conveyance system : design and lining of irrigation field channels, on farm structures for water conveyance, control & distribution.
- UNIT - III** **L-6**
Underground pipe conveyance system: Components and design; land grading: criteria for land levelling land levelling design methods, estimation of earth work; soil water plant relationship: soil properties influencing irrigation management.
- UNIT -IV** **L-6**
Soil water movement: Infiltration, soil water potential, soil moisture characteristics, soil moisture constants, measurement of soil moisture, moisture stress and plant response; water requirement of crops: concept of Evapotranspiration (ET), measurement and estimation of ET, water and irrigation requirement of crops, depth of irrigation, frequency of irrigation.
- UNIT -V** **L-6**
Irrigation efficiencies: Surface methods of water application: border, check basin and furrow irrigation-adaptability, specification and design considerations.

LABORATORY EXPERIMENTS

- | LIST OF EXPERIMENTS | TOTAL HOURS: 30 |
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| 1. Measurement of soil moisture by different soil moisture measuring instruments. | |
| 2. Measurement of irrigation water. | |
| 3. Measurement of infiltration characteristics. | |
| 4. Determination of bulk density. | |
| 5. Determination field capacity and wilting point. | |
| 6. Estimation of evapotranspiration . | |
| 7. Study on various land grading methods. | |
| 8. Design of underground pipeline system . | |
| 9. Estimation of various irrigation efficiencies . | |
| 10. Study of advance, recession and computation of infiltration opportunity time . | |
| 11. Infiltration by inflow-outflow method. | |
| 12. Evaluation of border irrigation method . | |
| 13. Evaluation of furrow irrigation method. | |
| 14. Evaluation of check basin irrigation method | |
| 15. Practical examinations. | |

TEXT BOOK :

1. Michael A.M. 2012,. Irrigation: "Theory and Practice". Vikas Publishing House New Delhi.

REFERENCE BOOKS:

1. Allen R. G., L. S. Pereira, D. Raes and M. Smith. 1998, "Crop Evapotranspiration guidelines for computing crop water requirement". Irrigation and drainage Paper 56, FAO of United Nations, Rome.
2. Murthy VVN. 2013, "Land and Water Management Engineering". Kalyani Publishers, New Delhi.