IRRIGATION AND DRAINAGE

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TYPE OF COURSE : Rerun | Core | UG
COURSE DURATION : 12 weeks (26 Jul’21 - 15 Oct’21)
EXAM DATE : 24 Oct 2021

INTENDED AUDIENCE : Agricultural Engineering/Agricultural Sciences
PRE-REQUISITES : An introductory background in chemistry, physics and Maths (calculus) will be needed.
INDUSTRIES APPLICABLE TO : All irrigation based companies.

COURSE OUTLINE :
Agricultural engineers have been applying scientific principles for the optimal use of natural resources in agricultural production for the benefit of humankind. This particular course deals with application of both irrigation and drainage principles in agriculture for achieving profitable crop production with minimal environmental implications. This is one of the core courses of Agricultural Engineering program recommended for undergraduate and graduate students. In this course we will focus on soil-water-plant-atmosphere relationship, crop water requirement, irrigation scheduling, irrigation water conveyance, measurement of irrigation water, water application methods, irrigation systems design and their performance evaluation, drainage of agricultural lands, management of salt affected soils, performance evaluation of drainage systems, ground water hydrology, irrigation wells and water-lifting devices-pumps. It involves weekly quizzes, in-class numerical problem solving, assignments and class tests.

ABOUT INSTRUCTOR :
Prof. D.R. Mailapalli graduated from the Indian Institute of Technology (IIT)- Kharagpur with a Ph.D degree in 2007. After having 6 years of postdoctoral research experience from the U.S. universities (UC-Davis and UW-Madison), Dr. Mailapalli joined as a faculty at IIT-Kharagpur in 2013. Since then he has been teaching On-farm water management (theory and lab), Tube wells and pumps, Surface water hydrology and Non-point source pollution control and management at UG and PG level. His research interests are in agricultural water management, irrigation hydraulics, sediment and nutrients transport and non-point source pollution. He has published more than 30 research articles and 20 conference papers, volunteered as a reviewer for more than 30 research papers.

COURSE PLAN :
Week 01 : Soil-Water-Plant-Atmosphere Relationship
Week 02 : Crop Water Requirement and Irrigation Scheduling
Week 03 : Irrigation Water Conveyance and Measurement of Irrigation Water
Week 04 : Water Application Methods
Week 05 : Irrigation Systems Design-1
Week 06 : Irrigation Systems Design-2
Week 07 : Performance Evaluation of Irrigation System
Week 08 : Drainage of Agricultural Lands
Week 09 : Management of Salt affected soils
Week 10 : Performance Evaluation of Drainage Systems
Week 11 : Ground Water Hydrology
Week 12 : Irrigation wells and Water-lifting devices-pumps