

PROFESSOR'S NAME	Dr. Dilip Kumar Swain
DEPARTMENT	Agriculture & Food Engineering
INSTITUTE	IIT Kharagpur
COURSE OUTLINE	<p>The course 'Crop Production Technology' for undergraduate students in Agricultural Engineering offers a wide range of knowledge on technological solutions for crop production at field level and understanding the modeling approach for yield prediction. The course carries about 32 lectures in different aspects of crop production and simulation.</p> <p>Learning Outcomes</p> <p>After successful completion of the course, the students will gain knowledge on the followings.</p> <ol style="list-style-type: none"> 1. Major components of crop production and their effect on crop growth and development 2. Production constraints and need of technological interventions from land preparation to crop harvest. 3. Input management for maximization of yield economic return. 4. Organic farming technology for sustainable agricultural production. 5. Management of biotic and abiotic stress in crop production. 6. Hydroponics for urban agriculture 7. Concepts of crop modeling and simulation for yield forecasting and evaluation of agronomic management. <p>Course outline</p> <p>Crop Production: Concepts of agronomy; Classification of crops; Techniques of raising field crops, horticultural crops, medicinal and aromatic plants; Cropping system for major agro-ecological regions; seed and seeding and planting density management; organic and inorganic nutrition of crops; water management for higher productivity; management of insects and pests, diseases</p>

and weeds; Management of dryland agriculture; Organic farming and sustainable agriculture; Hydroponics and vertical farming.

Crop Simulation: Models for crop yield assessment; Crop management simulation and yield forecasting; Crop response to climate change; Uncertainty and risk evaluation.

Referred books:

- 1) Principles of Crop Production By S. R. Reddy, Kalyani Publishers
- 2) Agronomy of field crops By S. R. Reddy, Kalyani Publishers
- 3) Modern Techniques of raising field crops by C. Singh, Oxford & IBH Publishing Co. Pvt. Ltd., new Delhi
- 4) Handbook of Agriculture, ICAR
- 5) Agricultural systems modeling and simulation by Robert M. Peart and R. Bruce Curry, Marcel Dekker, INC, New York, <http://www.dekker.com>

COURSE DETAILS

Sl. No	Module ID/ Lecture ID	Lecture Title/Topic	Duration
1	G16-Mod1	Introduction	0:19:21
2	G16-Mod2	Crop Production Components	0:45:47
3	G16-Mod3	Crop Classification	0:21:09
4	G16-Mod4	Crop Growth and Development and Factors Influencing the Growth and Development	1:18:25
5	G16-Mod5	Growth laws	0:13:11
6	G16-Mod6		
7	G16-Mod7		
8	G16-Mod8		
9			
10			