CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credit s	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
Agriculture Botany and Weed Management ALS-DSC 8	**4**	**2**	**0**	**2**	**Sem VII**	**Nil**

Course Learning Objectives

By the end of this course, students will be able to:

- Explain the role of plants in agricultural systems and the impact of plant characteristics on crop productivity and adaptation.
- Identify major weeds affecting crop production and understand their biological and ecological characteristics.
- Analyze interactions between crops and weeds and their effects on yield and quality.
- Evaluate weed management strategies, both conventional and modern.
- Apply botanical knowledge to solve practical problems in crop and weed management.

Learning Outcomes

Upon successful completion of the course, students will be able to:

- Describe plant structures and functions essential for crop growth and development.
- Explain physiological processes and their relevance to crop productivity.
- Critically assess various weed control methods, including herbicide classification and mode of action.
- Design integrated weed management plans suited to specific cropping systems and ecological conditions.

Theory : 30 Hours

Unit 1 Seed Physiology and Physiology of Growth and Yield 09 hours

Seed dormancy, types, factors causing dormancy, mechanism and methods for breaking seed dormancy, seed viability and seed vigour, Principal of growth analysis, source-sink relationship, factors affecting growth, dry matter partitioning and yield, crop simulations and modeling, use of controlled environment for plant growth and development studies.

Unit 2: Plant Hormone and Reproductive Physiology 10 Hours

Role of hormones in plant growth and development, commercial applications of growth regulators, growth retardant and its usefulness, Photoperiodism, flowering response, photo perception, critical photoperiod, photo-induction, phytochrome and its role in flowering, vernalization, physiology of fruit ripening, and senescence.

Unit 3: Biology of Weeds and Weed Management Practices 04 Hours

Ecology of weeds, competition, reproduction of weeds, Mechanical Practices, Cultural Practices, Biological control.

Unit 4: Weed Control Methods 07 Hours

Herbicide classification, Selectivity of herbicides, absorption and translocation of herbicides, Mode of action of herbicides, Detoxification mechanisms of herbicides. Weed resistance to herbicides, weed control in wheat, rice and vegetable crops. Control of five obnoxious weeds.

Practical : 60 Hours

- To study opening and closing of stomata.
- To determine stomatal index of the given leaf.
- To study the effect of ethylene on shelf life of cut flowers.
- To study the effect of cytokinin on leaf senescence.
- To study effect of heavy metals on growth and development.
- To test the viability of weed seeds.
- To evaluate the allelopathic effects of weeds on germination of crop seeds.
- To evaluate effect of herbicides on seed germination and seedling growth of weeds.

Suggested Readings:

1. Taiz, L. & Zeiger, E. 2006 Plant Physiology (5th edition) Sinauer Associates, Inc. Sunderland,
2. M.A.W.G. Hopkins (2009) Introduction to plant physiology, John Wiley and Sons Inc USA.
3. Mandal, R.C. (2010) Weeds, weedicides and weed control: Principle and Practice Agro Botanical Publishers, Delhi
4. Das TK (2011) Weed Science: Basics and Applications JPublisher ai Brothers
5. F. M. Ashton and T. J. Monaco (2002) *Weed Science: Principles and Practices*. John Wiley and Sons. Inc.
6. V. S. Rao (2002) *Principles of Weed Science.* Oxford and IBH Publishers, New Delhi

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.