

**GENERIC ELECTIVES (BOT-GE-8)**

**CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE**

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course
		Lecture	Tutorial	Practical/ Practice		
<b>Agricultural Botany and Weed Science</b>  <b>BOT-GE-8</b>	<b>4</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>Nil</b>	<b>Nil</b>

**Learning Objectives:**

To gain the knowledge on:

- the conditions required for seed germination
- growth hormones, plant development and flowering conditions
- weeds and the methods to control weeds

**Learning Outcomes:**

After completion of this course the students would be able to understand:

- how is the quality of seeds judged and how are the suitable conditions for the seed germination created.
- how are the growth, flowering and fruiting in plants managed through the applications of hormones.
- how are weeds managed in commercial crops.

**SYLLABUS OF BOT-GE-8**

**Unit 1: Seed Physiology**

**Weeks: 02**

Seed dormancy types, factors, mechanism and methods for breaking dormancy, seed viability, seed vigour and seed germination.

**Unit 2: Physiology of Crop Growth and Yield**

**Weeks: 2.5**

Growth, methods of growth analysis, factors affecting growth, concept of phytotronics and fertilizers (Nitrogen, Phosphorus, biofertilizers).

**Unit 3: Regulation of Growth and Development**

**Weeks: 02**

Role of hormones in plant growth and development; growth retardants.

**Unit 4: Reproductive Physiology and Senescence**

Physiology of flowering; Photoperiodism; Vernalization; Physiology of fruit ripening, senescence and regulation of senescence.

**Unit 5: Biology of Weeds**

**Weeks: 02**

Ecology of weeds, competition, reproduction of weeds; Allelopathy and Invasive Plants.

**Unit 6: Crop Management Practices**

**Weeks: 3.5**

Mechanical, Cultural, Biological and Chemical Weed control; Some obnoxious weeds and their management, Integrated pest management (IPM).

**Practicals:**

1. To study the effect of ethylene on shelf life of cut flowers/ To study the effect of cytokinin on leaf senescence. **(Weeks: 02)**
2. To test the viability of weed seeds. **(Weeks: 03)**
3. To study the allelopathic effects of weeds on germination of crop seeds. **(Weeks: 03)**
4. To study the effect of herbicides on seed germination and seedling growth of weeds. **(Weeks: 03)**
5. Determination of pH and analysis of a soil sample for carbonates, chlorides, sulphates, organic matter and base deficiency by rapid field tests. **(Week: 01)**
6. To perform the qualitative test for Nitrogen ( $\text{NH}_4^+$ ,  $\text{NO}_3^-$ , urea) in a fertilizer and the soil sample. **(Week: 01)**
7. Demonstration / photographs for the mechanisms used in herbicide application. **(Week: 01)**
8. Field trip to a crop land to study weeds. **(Week: 01)**
9. Submission of any two properly dried and mounted weed specimens with the herbarium label.

**Suggested Readings:**

1. Ashton, F. M., Monaco, T. J. (2002). Weed Science: Principles and Practices. New Jersey, U.S.: John Wiley and Sons. Inc.
2. Hopkins, W. G., Huner, N. P. A. (2009). Introduction to Plant Physiology, 4<sup>th</sup> edition. New Delhi, Delhi: Wiley India Pvt. Ltd.
3. Taiz, L., Zeiger, E., Moller, I. M., Murphy, A. (2018). Plant Physiology and Development International 6<sup>th</sup> edition. New York, NY: Oxford University Press, Sinauer Associates.
4. Mandal, R.C. (1990). Weeds, weedicides and weed control: Principle and Practice. New Delhi, Delhi: Agro Botanical Publishers.

5. Rao, V. S. (1999). Principles of Weed Science. Oxford and IBH Publishers, New Delhi.
6. Subramanian, S. (2017). All about weed control. New Delhi, Delhi: Kalayani publishers.