DEPARTMENT OF AGRONOMY
Faculty of Agricultural Sciences
University of the Punjab, Lahore

Course Outline

Programme	B.Sc. (Hons.) Agriculture (Agronomy)	**Course Code**	**AGR-301**	**Credit Hours**	3 (2-1)
Course Title	**INTRODUCTION TO WEED SCIENCE**				

Course Introduction

- Basic information on agronomy, phonological stages, and farm management.
- To nurture students regarding principles of weed science and control methods.

Learning Outcomes

On the completion of the course, the students will:

1. Get introduced to the discipline of weed science
2. Basic concept of controlling methods
3. To evolve a brief concept of the importance of weed eradication
4. To develop presentational skills through class participation and improve the learning abilities of students with home assignments

	Course Content	**Assignments/Readings**
Week 1	1.1 Definition and importance of weeds(T) 1.1.1 Concept and Importance of Weed Science 1.1.2 Introduction of Weed Science 1.1.3 Significance and Importance 1.1.4 Role of weed science in agriculture	Weed Science: Principles and Practices. 4th Edition.
	Practical Work Weed collection and Identification	
Week 2	1.2 Yield losses and harmful effects of weeds. 1.2.1 The Relationship Between Weed Density and Crop Yield 1.2.2 Plant Characteristics and Competitiveness 1.2.3 Economic effect on the GDP of the country	Zimdhal, R.L. 2007.
	Practical Work Weed collection and Identification	

Week 3	1.3 Classification and biology of weeds 1.3.1 Weed Biology and Ecology 1.3.2 Weed Characteristics 1.3.3 Weed Classification 1.3.4 Factors Relating to Weed Establishment and Survival	Weed Science: Principles and Practices. 4th Edition.
	Practical Work Weed collection and Identification	
Week 4	1.4 4.1. Weed-crop interference 1.4.1 4.1.1. Plant interference1 1.4.2 4.1.2. Weed-Crop Competition 1.4.3 4.1.3. Weed and Plant (Crop) Management	Reference Articles
	Practical Work Weed collection and Identification	
Week 5	1.5 Competition and Allelopathic Interactions 1.5.1 5.1.1. Competition between weeds and crop 1.5.2 5.1.2. Density Of Weeds and Their Effect on Crop Yields 1.5.3 Chemical interactions between plants	Weed Science: Principles and Practices. 4th Edition.
	Practical Work Demonstration of various hand tools and implements for weed control.	
Week 6	1.6 Competition and Allelopathic Interactions 1.6.1 5.1.4. Seed Dissemination 1.6.2 5.1.5. Crop Seed, Grain Feed, Hay, and Straw 1.6.3 5.1.6. Wind/Water 1.6.4 5.1.7. Animal 1.6.5 5.1.8. Machinery 1.6.6 5.1.9. Weed Screening	Weed Science: Principles and Practices. 4th Edition.
	Practical Work Demonstration of various hand tools and implements for weed control.	

Week 7	1.7 Methods of weed management: preventive, cultural, mechanical, biological, and chemical 1.7.1 The Definitions of Weed Prevention, Control, Eradication, and Management 1.7.2 Weed Control/Prevention/Eradication 1.7.3 Cultural Weed Control 1.7.4 Mechanical and Non-Mechanical Control	Fundamental of Weed Science 3rd Ed. Elsevier, academic press, USA
	Practical Work Demonstration of various hand tools and implements for weed control.	
Week 8	1.8 6.1. Methods of weed management; preventive, cultural, mechanical, biological and chemical 1.8.1 Biological Weed Control 1.8.2 Classification of Herbicides 383 1.8.3 Advantages Disadvantages of Herbicides 1.8.4 Introduction to Chemical Weed Control	Zimdhal, R.L. 2007.
	Practical Work Demonstration of various hand tools and implements for weed control.	
Week 9	**MID-TERM EXAM**	
Week 10	7.1. Weed control in major field crops 7.1.1. Weed Management Principles in Six Systems 7.1.2. Small Grain Crops/Corn and Row Crops/Pastures and Rangeland/Perennial Crops/Turf/Woody Plants	Internet Source
	Practical Work Computation of herbicide doses	
Week 11	8.1. Integrated weed management 8.1.1. Introduction 8.1.2. Scouting 8.1.3. Row Crop Cultivation 8.1.4. Burning/Flooding 8.1.5. Practices	Weed Science: Principles and Practices. 4th Edition.
	Practical Work	

	Computation of herbicide doses	
Week 12	9.1. Herbicide resistance and tolerance against weeds and crops 9.1.1 Herbicides and Plants 9.1.2. Factors Affecting Herbicide Performance 9.1.3 Physiology of Herbicides in Plants	Zimdhal, R.L. 2007.
	Practical Work Computation of herbicide doses	
Week 13	9.1. Herbicide resistance and tolerance against weeds and crops 9.1.4. Management Strategies For Herbicide-Resistant Weed 9.1.5. Identification of Genes for Herbicide Resistance 9.1.6. Transfer of Genes into Crop Plants 9.1.7. Modification of Genes for Expression in Plants 9.1.8. Modification of Genes for Expression in Plants	Weed Science: Principles and Practices. 4th Edition.
	Practical Work Demonstration of the use of sprayers for herbicide application.	
Week 14	10.1. Technical information regarding current herbicides 10.1.1. Formulations 10.1.2. Types of Formulation 10.1.3. Herbicide Storage •Spray Additives 10.1.4. Adjuvants According to Use 10.1.5. Herbicide Drift 10.1.6. Application Equipment	Weed Science: Principles and Practices. 4th Edition.
	Practical Work Demonstration of the use of sprayers for herbicide application.	
Week 15	10.1. Technical information regarding current herbicides 10.1.7. Herbicide Safety 10.1.8. Perception of Risk 10.1.8. Rules for Safe Use of Herbicides 10.1.9. The LD50 of Some Herbicides	

	10.1.10. Environmental Contamination	
	Practical Work Demonstration of the use of sprayers for herbicide application.	
Week 16	11.1. Mulching and Soil solarization. 11.1.1. Procedures of Mulching 11.1.2. Importance of Mulching 11.1.3. What is soil solarization?	Relevant Books Reference Articles Internet Source
	Practical Work Demonstration of the use of sprayers for herbicide application.	
Week 17/18	**FINAL EXAM**	

Textbooks and Reading Material

1. Textbooks.

In the detailed course outline, one may mention chapters of the textbook with the content topics

2. Suggested Readings

2.1. Books

1. Ashiq M., M.M. Nayyar and J. Ahmad. 2003. Weed Control Handbook Directorate of Agronomy. Ayub Agri. Res. Inst. Faisalabad.
2. Gupta O.P. 1998. Modern Weed Management. Agro Botanica, Bikaner, India.
3. Kumar, J.R. and Jagannath. 2003. Weed Science: Principles. Kalyani Publishers, New Delhi.
4. Nayyar, M.M. Ashiq and J. Ahmad. 2001. Manual on Punjab Weeds: Part I and II. Directorate of Agronomy, Ayub Agri, Res, Inst, Faisalabad.
5. Rao, V.S. 2002. Principles of Weed Science 2nd Edition. Sci. Pub. Inc. USA.
6. Zimdhal, R.L. 2007. Fundamental of Weed Science 3rd Ed. Elsevier, academic press, USA.

2.2. Journal Articles/ Reports

Note:

1. It is preferable to use the latest available editions of books. Mention the publisher & year of publication.
2. The References/ bibliography may be by the typing manual of the concerned faculty/subject. Preferably follow the APA 7th Edition publication manual.

Teaching Learning Strategies

1. White board and markers
2. Slide projector or multimedia
3. Overhead projector
4. Photocopy machine or photocopying facilities

5. Reference books
6. Journals
7. Internet (web sited literature)
8. Field Tours

Assignments: Types and Number with Calendar

1. Assignment (10 Marks)
2. Continuous assessment (Quizzes) (10 Marks)
3. Class participation Discussion, field trip, regularity punctuality (5 Marks)

Assessment

Sr. No.	Elements	Weightage	Details
1.	Midterm Assessment	35%	Written Assessment at the mid-point of the semester.
2.	Formative Assessment	25%	Continuous assessment includes Classroom participation, assignments, presentations, viva voce, attitude and behavior, hands-on activities, short tests, projects, practicals, reflections, readings, quizzes, etc.
3.	Final Assessment	40%	There is a Written Examination at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course, the teacher may assess their students based on term papers, research proposal development, field work, report writing, etc.