

# BUTTE COLLEGE

## COURSE OUTLINE

### I. CATALOG DESCRIPTION

**EH 62 - Weed Science and Invasive Plants**

**3 Unit(s)**

**Prerequisite(s):** NONE

**Recommended Prep:** Reading Level IV; English Level IV; Math Level III

**Transfer Status:** CSU

34 hours Lecture

51 hours Lab

This course is an introduction to the classification, identification, and life cycles of common poisonous and invasive weeds. Topics include the biological, chemical, cultural, and physical control of weeds. Characteristics of weeds and their identification, and herbicide application will be examined.

### II. OBJECTIVES

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

- A. Identify the botanical characteristics of weeds and plant physiologic and growth functions.
- B. Identify common weeds found throughout California.
- C. Explain and demonstrate the safe methods of applying various herbicides and wearing personal protective equipment.
- D. Describe annual and perennial weed species and their habitats.
- E. Contrast phytotoxic properties of applied herbicides.
- F. Compare the role of biologicals to conventional products in weed management.
- G. List specific cultural and mechanical practices to prevent and manage weed infestations.
- H. Explain the public perceptions and be able to defend weed management practices.
- I. Identify various career options available in weed science.
- J. Identify and describe environmental conditions influencing local crop production.

### III. COURSE CONTENT

#### **A. Unit Titles/Suggested Time Schedule**

Lecture	
<u>Topics</u>	<u>Hours</u>
1. Introduction to Weed Science	1.00
2. Weed Identification, Biology, and Ecology	3.00
3. Weed Life Cycles	2.00
4. Cultural and Physical Control Methods	2.00
5. Mechanical Control Methods	2.00
6. Biological Control Methods	2.00
7. Chemical Control Methods	2.00
8. Herbicides and Modes of Action	3.00
9. Herbicide-Tolerant Crops	2.00
10. Registration, Regulation, and Safe Use of Pesticides	2.00
11. Environmental Fate of Herbicides	2.00
12. Agronomic and Vegetable Crops and Herbicides	4.00
13. Tree, Vine, and Soft-Fruited Crops Management	2.00
14. Turfgrass Weed Management	2.00
15. Organic Weed Management Practices	1.00

16. Sprayers and Calibration	2.00
Total Hours	34.00

#### Lab

<u>Topics</u>	<u>Hours</u>
1. Weed identification techniques	3.00
2. Weed identification seedlings	6.00
3. Weed identification sedges and grasses	6.00
4. Weed identification broadleaf species	6.00
5. Calibration and problem solving	3.00
6. Herbicide symptomology and injury	6.00
7. Herbicide safety and application	6.00
8. Herbicide fate in the environment	3.00
9. State laws and regulations	3.00
10. Weed specimen and collection presentation	3.00
11. Cultivation equipment and use	3.00
12. Pesticide formulations and labeling	3.00
Total Hours	51.00

#### IV. **METHODS OF INSTRUCTION**

- A. Lecture
- B. Field Trips
- C. Homework: Students are required to complete two hours of outside-of-class homework for each hour of lecture
- D. Problem-Solving Sessions
- E. Laboratory Experiments

#### V. **METHODS OF EVALUATION**

- A. Exams/Tests
- B. Quizzes
- C. Homework
- D. Lab Projects

#### VI. **EXAMPLES OF ASSIGNMENTS**

- A. Reading Assignments
  - 1. Read the Principles of Weed Control chapter on chemical control methods and compare the herbicide symptoms to those found on assigned herbicide labels provided in lecture. Be prepared to discuss in class.
  - 2. Review the Principles of Weed Control chapter on herbicide-tolerant crops through biotechnology. Compare current use of commercially available genetically modified agronomic crops with research presented in refereed journal articles (e.g., Agronomy Journal, Crop Science, Journal of Agronomy, Journal of the American Society for Horticultural Science).
- B. Writing Assignments
  - 1. Explain the principles of herbicide rotation and mode of action for three weeds found in the Butte College vineyard. Write a three-page explanation to show the relationship of these principles and include five specific examples of HRAC herbicide classes that could

be rotated in this cropping system.

2. Write a research lab report comparing the results of selected herbicides on common California vineyard weeds. Include the experimental design, objectives of the study, results and discussion. This report should be a minimum of five pages and include pictorial images of the treatments as figures, tables, and a graph of the final data.

C. Out-of-Class Assignments

1. Create a weed collection that includes at least 50 invasive species listed on the California Department of Pesticide Regulation Weed Control Knowledge Expectations. Students will include both seedlings and mature specimens.
2. Solve three herbicide calibration problem sets as assigned by the instructor.

## VII. **RECOMMENDED MATERIALS OF INSTRUCTION**

Textbooks:

- A. California Weed Science Society. Principles of Weed Control. 3rd Edition. Thomson Publications, 2002.
- B. Joseph M. DiTomaso and Evelyn A. Healy. Weeds of California and Other Western States. 2nd Edition. UC Department of Agriculture and Natural Resources, 2006.
- C. Ross, M.A. & Lembi, C.A. Applied Weed Science: Including the Ecology and Management of Invasive Plants. 3rd Edition. Prentice Hall, 2009.

Materials Other Than Textbooks:

- A. Dryers and ventilators
- B. Fastex buckle straps
- C. Botany paper and glue
- D. Hand lens (10x)
- E. Plant press

**Created/Revised by:** Carrie Monlux

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