BSPM 308 Ecology and Management of Weeds

3 credits; two 1-hour lectures weekly; one 3-hr lab weekly

Instructor: Dr. George Beck; Bioag Sciences & Pest Management; 116 Weed Research Lab; George.Beck@colostate.edu; 1-7568

Course Objectives: students will be able to:

- Understand and explain how weed biology and the environment interact to influence weed ecology ;
- Show how biological and ecological factors influence and are used to create management systems;
- Describe physical, cultural, chemical, and biological control methods and understand how these are woven into management systems;
- Develop ecologically-based weed management systems for rangeland, natural areas, cropping systems, horticultural and landscape settings, and non-crop areas.

Cheating and plagiarism: We will follow CSU's policies on cheating and plagiarism.

Lectures: Tuesday and Thursday 9:00-9:50 a.m., Shepardson 118 (two contact hours weekly per student)

Laboratory: Section 1; Tuesday 2:00-5:00 p.m., E009 Plant Sciences
Section 2; Wednesday 2:00-5:00 p.m. E009 Plant Sciences
Section 3; Friday 2:00-5:00 p.m. E009 Plant Sciences
(Three contact hours weekly per student in each lab; time is made available in each lab session to create lab reports but most students will spend two to three hours each week outside of class to finalize lab reports. Final lab sessions during week 12.)

Text: Required: Zimdahl, R.L. 2007. Fundamentals of Weed Science.

Recommended:
Radosevich, S., J. Holt, and C. Ghersa. 1997. Weed Ecology: Implications for Management

Grading:

3 one-hour exams @ 100 point each	300 points
1 final exam	150
5 lab quizzes @ 10 point each	50
Weed identification exam	100
7 lab reports @ 20 point each	140
TOTAL POINTS POSSIBLE	740

BSPM 308 Ecology and Management of Weeds

The plus/minus grading system will be used as follows:

Grade	*Course Credit*	*Numerical Equivalent*	*Indicates*
A +	*4.0*	*97-100*	
A	*4.0*	*93-96.9*	*Excellent*
A-	*3.7*	*90-92.9*	
B+	*3.3*	*87-89.9*	
B	*3.0*	*83-86.9*	*Above Average*
B-	*2.7*	*80-82.9*	
C+	*2.3*	*77-79.9*	
C	*2.0*	*70-76.9*	*Average*
D	*1.0*	*60-69.9*	*Below Average*
F	*0*	*0-59.9*	*Failure*

A. The 3 one-hour exams are not comprehensive but the final exam is comprehensive.
B. There are 8 labs with 7 lab write-up reports. Except for the weed identification and sprayer calibration labs, students will conduct group experiments as a means to learn and understand basic weed science principles.
C. A weed identification quiz is part of the lab and students will learn to recognize the identifying characteristics associated with 27 Colorado noxious weeds.
D. There will be 5 lab quizzes on information that *will be* covered in labs and questions concerning results from completed lab exercises.
E. Students will have the opportunity to score extra credit points on each one-hour exam and the final exam; Weed Jeopardy will be played during the last week of class as an aid for final exam preparation and students can earn extra credit points during this exercise.

BSPM 308 Ecology and Management of Weeds

Lecture Topic	Week of Semester
Introduction	1
What is weed science?	
What is weed mgmt?	
Objective of BSPM308	
What is a weed?	
Definitions	
Crops and manipulated environments	
Wildland & non-crop areas	
Positive & negative aspects of weeds	
Characteristics of weeds	
Weed classification	2
Phylogenetic relationships	
Type of plant	
Habitat	
Life history	
Physiological	
Undesirability	
Weed biology	2-4
Sexual reproduction	
Asexual reproduction	
Dispersal in time and space	
Weed spread	
Weed seed dormancy	
Recruitment	
Germination	
Establishment	
EXAM I	5
Weed ecology	5-6
Definitions	
Succession	
Patterns or evolutionary development	
r and K selection	

BSPM 308 Ecology and Management of Weeds

Lecture Topic	Week of Semester
C, R, and S selection	
Weeds as Strategists	
Competitive ruderals	
Stress-tolerant competitors	
Influence of humans on weed evolution	
Crop mimics	
Invasive and noxious weeds	
Interference	
Positive types of interference	
Commensalism	
Protocooperation	
Mutualism	
Negative types of interference	
Competition	
Allelopathy	
Parasitism	
Weed control and weed management	
Prevention, eradication, and control	7-9
Methods of weed control	
Physical	
Cultural	
Biological	
EXAM II	9
Chemical (synthetic & organic herbicides)	10-12
History	
Advantages	
Disadvantages	
Herbicide safety	
Classification	
Modes and mechanisms of action	
Herbicide resistance	
Environmental fate	
EXAM III	12
Invasive weeds	13
Thanksgiving break	

BSPM 308 Ecology and Management of Weeds

Lecture Topic	Week of Semester
Ecologically-based weed management	14
Russian olive management: A case study in the development of an ecologically-based weed management plan	15
Weed jeopardy (prepare for final exam)	15
Final exam	16

BSPM 308 ECOLOGY AND MANAGEMENT OF WEEDS LAB SCHEDULE 2013

Lab[1]	Number of weeks for lab	Week of semester
1. Introduction and weed ID	4	1
2. Weed seeds in soil	2 (plant wk 2; harvest wk 4)	2
3. Sprayer calibration	1	3
4. Plant competition	4 (sow wk 4; harvest wk 8)	4
5. Weed ID quiz		5
Weed control for turf establishment	6 (sow wk 5; trt 1 wk 9; trt 2 wk 10; 1st harvest wk 11; 2nd harvest wk 12)	5
6. Herbicide selectivity	4 (sow wk 6; trt wk 7; observe wks 8 & 9; harvest wk 10)	6
7. Herbicide volatility	2 (setup wk 7; observe wk 8)	7
8. Herbicide mobility in soil	4 (setup, trt wk8; sow wk 9; harvest wk 12)	8

[1]Three-hour lab meets once weekly; 3 sections; finished by Thanksgiving week