Weeds and their management is a challenging and demanding task that requires diverse abilities. The term weed is an anthropocentric construct meaning it is a human colored definition. We will study the biology and ecology of weedy plants drawing on examples from a wide range of plant systems; those systems include agricultural fields (agronomic and horticultural crops) and forests. Of course our knowledge of the biology and ecology of weedy plant populations will then be used to underpin and assess control tactics and their integration. The discipline has a history of equating management with herbicidal control and in fact some 80% of the pesticides used in U.S. agriculture are herbicides. However through novel farmer designed management systems, through a research community focused on alternative methods of management and through increased focus on invasive species, exciting breakthroughs are occurring in alternative methods of management and prevention. This course seeks to introduce you to the breadth of management approaches in use and under study. The specific objectives are for students to be familiar with: 1) the local weed flora, 2) fundamental aspects of weed biology and ecology relevant to managed landscapes, 3) the control methods used in managing weed populations, 4) how control measures can be integrated to accomplish acceptable levels of pest suppression, 5) operationalizing a weed management plan, 6) how herbicides enter and move to their site of action in plants, 7) classifying herbicides by their site of action, and 8) the distinction between herbicide concentration in soils and plant available herbicide concentration.

**Prerequisite:** 6 credits in plant sciences

**Cross-listed with:** AGECO 438

**AGRO 460: Advances and Applications of Plant Biotechnology**

3 Credits

This course provides a comprehensive overview and current status of plant biotech research. The course provides knowledge of plant systems that fall in the category of GMOs. BIOTC 460 / AGRO 460 Advances and Applications of Plant Biotechnology (3) This course will provide a comprehensive overview and status of current plant biotech research. The focus is on providing knowledge of the biology of plant systems. Consequences of development of a transgenic plant either for food (crops) or as a tool to understand molecular, genetic, and inheritance mechanisms of a trait will be discussed in detail. The course will deliver the current literature and understanding of mechanisms involved in herbicide resistance in transgenic plants. Specific topics that will be of interest to students from various disciplines include disease and insect resistance, quality traits, and secondary metabolites. Molecular biology of different pollination systems will be examined so that students will understand the concept of gene flow from transgenic to non-transgenic crops. Examples from recent developments on the beneficial use of transgenic plants as producers of modified compounds, starches, antibodies and their use in phytoremediation of toxic and organic pollutants will be discussed from the perspective of genetic and molecular plant systems. Gene expression of transgenic plant traits and the stability of an engineered crop will be discussed. Specific emphasis will be on different modes of inheritance that a transgenic plant can follow after its development and release into the environment. The course also prepares students for understanding the regulatory processes that are required for testing, moving, and environment release of transgenic crops. The laboratory component of the course will introduce students to the common technique of molecular biology that are used to detect expression in transgenic plants. Transgenic maize plants will be grown in a greenhouse and analyzed for expression of introduced genes.
Enforced Prerequisite at Enrollment: BMB 251 or MICRB 251 or BIOL 230W or BMB 251H or BIOL 230M
Cross-listed with: BIOTC 460

AGRO 490: Colloquium
1 Credits
Continuing written and oral presentations developed by students in consultation with the course instructor.

Prerequisite: seventh-semester standing
Cross-listed with: SOILS 490

AGRO 495: Internship
1-5 Credits/Maximum of 5
Supervised field experience related to the student's major.

Prerequisite: approval of proposed assignment by instructor prior to registration.

AGRO 496: Independent Studies
1-18 Credits/Maximum of 18
Creative projects, including research and design, which are supervised on an individual basis and which fall outside the scope of formal courses.

AGRO 496A: **SPECIAL TOPICS**
3-4 Credits

AGRO 497: Special Topics
1-9 Credits/Maximum of 9
Formal courses given infrequently to explore, in depth, a comparatively narrow subject which may be topical or of special interest.