Soil + Crop Sciences-SOCR (SOCR)

Courses

SOCR 100  General Crops  Credits: 4 (3-2-0)
Course Description: Production and adaptation of cultivated crops; principles affecting growth, development, management, and utilization.
Prerequisite: None.
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 171  Environmental Issues in Agriculture (GT-SS3)  Credits: 3 (2-0-1)
Also Offered As: HORT 171.
Course Description: Historical development of agriculture; environmental consequences of modern food production and other cultural approaches to agriculture.
Prerequisite: None.
Registration Information: Must register for lecture and recitation. Credit not allowed for both SOCR 171 and HORT 171.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.
Additional Information: Global & Cultural Awareness 3E, Human Behavior, Culture, or Social Frameworks (GT-SS3).

SOCR 177  Applied Information Technology in Agriculture  Credit: 1 (0-0-0)
Course Description: Introduction to database and project management, GIS/GPS and remote sensing, as they apply to agriculture, the environment, and business management.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 192  Water in the West  Credits: 3 (0-0-3)
Course Description: History and current status of water resources management and policy in the western United States.
Prerequisite: None.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 200  Seed Anatomy and Identification  Credit: 1 (0-2-0)
Course Description: Principles of seed anatomy including reproduction, identification, and seed characteristics of plant families.
Prerequisite: BZ 104 or BZ 110 or BZ 120 or HORT 100 or LIFE 102 or SOCR 100.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 240  Introductory Soil Science  Credits: 4 (3-2-0)
Course Description: Formation, properties, and management of soils emphasizing soil conditions that affect plant growth.
Prerequisite: CHEM 107 or CHEM 111.
Registration Information: Must register for lecture and laboratory. Sections may be offered: Online.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 300  Seed Purity Analysis  Credits: 2 (0-4-0)
Course Description: Fundamentals for determining physical purity of a seed lot using established rules and procedures.
Prerequisite: SOCR 200.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 301  Seed Germination and Viability  Credits: 2 (0-4-0)
Course Description: Seed viability tests including standard germination and tetrazolium, seed viability, dormancy, parameters of viability and evaluation.
Prerequisite: SOCR 201.
Registration Information: Written consent of instructor. Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 310  Agronomic Plant and Seed Identification  Credits: 2 (0-4-0)
Course Description: Evaluate characteristics needed to identify agronomic plant and seed species.
Prerequisite: BZ 104 or BZ 110 or BZ 120 or HORT 100 or LIFE 102 or SOCR 100.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 320  Forage and Pasture Management  Credits: 3 (3-0-0)
Course Description: Fundamentals of establishment, management, and utilization of cultivated forages including hay, silage, and pasture production.
Prerequisite: None.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: Yes.
SOCR 322 Principles of Microclimatology Credits: 3 (3-0-0)
Course Description: Principles of microclimatology including energy balance concepts for soil and vegetation surfaces, and their application.
Prerequisite: PH 100 to 499 - at least 3 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 330 Principles of Genetics Credits: 3 (3-0-0)
Course Description: Transmission, population, and molecular genetics; practical applications.
Prerequisite: BZ 110 or BZ 120 or LIFE 102.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 331 Genetics Laboratory Credit: 1 (0-3-0)
Course Description: Experimental techniques in transmission and molecular genetics.
Prerequisite: SOCR 330, may be taken concurrently.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 341 Microbiology for Sustainable Agriculture Credit: 1 (1-0-0)
Course Description: Functional roles and management of soil organisms in organic agriculture, emphasis on ecological interactions with plants and plant pathogens.
Prerequisite: SOCR 240.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 342 Organic Soil Fertility Credit: 1 (1-0-0)
Course Description: Organic soil fertility management in framework of holistic organic farming system.
Prerequisites: SOCR 240 and SOCR 341 and SOCR 350.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 343 Composting Principles and Practices Credit: 1 (1-0-0)
Course Description: Fundamentals of compost production, use, and regulation.
Prerequisites: SOCR 240 and SOCR 350.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 344 Crop Development Techniques Credit: 1 (1-0-0)
Course Description: Conventional and transgenic approaches to crop variety development.
Prerequisite: BZ 120 or LIFE 102 or LIFE 103.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 345 Diagnosis and Treatment in Organic Fields Credits: 2 (0-4-0)
Also Offered As: HORT 345.
Course Description: Field experience in diagnosis of pest and nutrient problems on organic farms and development of treatment recommendations.
Prerequisites: (BSPM 302 or BSPM 308 or BSPM 361) and (HORT 100 or SOCR 100) and (SOCR 240).
Registration Information: Credit not allowed for both SOCR 345 and HORT 345. Required field trips.
Term Offered: Summer (even years).
Grade Mode: Traditional (even years).
Special Course Fee: Yes.

SOCR 350 Soil Fertility Management Credits: 3 (3-0-0)
Course Description: Managing soil fertility and fertilizers to meet plant nutrient requirements in an environmentally sound manner with emphasis on nutrient cycling.
Prerequisite: SOCR 240.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 351 Soil Fertility Laboratory Credit: 1 (0-2-0)
Course Description: Soil chemical analyses and development of fertilizer recommendations for crops.
Prerequisite: SOCR 350, may be taken concurrently.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 370 Irrigation Principles Credits: 2 (2-0-0)
Course Description: Determination of irrigation water requirements based on the estimation of storage and movement of water in the soil-plant-atmospheric system.
Prerequisites: (HORT 100 or SOCR 100 or BZ 120) and (SOCR 240).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 371 Irrigation of Field Crops Credit: 1 (1-0-0)
Course Description: Management of irrigation systems for field crops with emphasis on irrigation methods, irrigation scheduling and strategies for water conservation.
Prerequisite: SOCR 370.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 377 Geographic Information Systems in Agriculture Credits: 3 (2-2-0)
Course Description: Introduction to geographic information systems and global positioning systems with applications to agriculture.
Prerequisite: SOCR 100 to 499 - at least 3 credits or CS 100 to 499 - at least 3 credits.
Registration Information: Credit not allowed for both SOCR 377 and SOCR 577. Required field trips.
Term Offered: Fall.
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: Yes.
SOCR 384 Supervised College Teaching  Credits: Var[1-5]
Course Description:
Prerequisite: None.
Registration Information: A maximum of 10 combined credits for all 384 and 484 courses are counted towards graduation requirements.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 400 Soils and Global Change: Science and Impacts  Credits: 3 (2-2-0)
Course Description: Foundations on the science of global change and its impact on soil processes and biota.
Prerequisites: (SOCR 240) and (LIFE 220 or LIFE 320).
Registration Information: Required field trips. Sections may be offered: Online.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 400A Soils and Global Change: Science and Impacts  Credits: 3 (2-2-0)
Also Offered As: SOCR 400B.
Course Description: Foundations on the science of global change and its impact on soil processes and biota.
Prerequisites: (LIFE 220 or LIFE 320) and (SOCR 240).
Registration Information: Field trips required.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 400B Soils and Global Change: Science and Impacts  Credits: 3 (3-0-0)
Also Offered As: SOCR 400A.
Course Description: Foundations on the science of global change and its impact on soil processes and biota.
Prerequisites: (LIFE 220 or LIFE 320) and (SOCR).
Registration Information: Field trips required.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 401 Greenhouse Gas Mitigation, Land Use, and Mgmt  Credits: 3 (2-3-0)
Course Description: Introduction to greenhouse gas estimation methods and mitigation project development in the land use sector.
Prerequisite: SOCR 240.
Registration Information: Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 410 Seed Processes: Storage and Deterioration  Credit: 1 (0-0-1)
Course Description: Environmental conditions and management factors influencing storage and deterioration of seeds, including physiological and biochemical changes.
Prerequisite: BZ 104 or BZ 105 or BZ 120.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 411 Large Seeded Legume Seed Production  Credit: 1 (0-0-1)
Course Description: Principles for seed production of large-seeded legume crops with emphasis on common bean, peanut, and soybean.
Prerequisite: BZ 104 or BZ 105 or BZ 120.
Terms Offered: Fall, Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 412 Seed Processes: Separation and Conditioning  Credit: 1 (0-0-1)
Course Description: Understanding the physical process required to separate pure seed from contaminants and maintain viability.
Prerequisite: BZ 104 or BZ 105 or BZ 120.
Registration Information: Sections may be offered: Online.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 415 Pollinator Management in Agroecosystems  Credit: 1 (1-0-0)
Also Offered As: BSPM 415.
Course Description: Fundamental concepts of pollinator management, sustainable crop-pollinator interactions, global issues on pollinator conservation.
Prerequisite: HORT 100 or SOCR 100.
Registration Information: This is a partial-semester course. Credit not allowed for both SOCR 415 and BSPM 415. Required field trips.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 420 Crop and Soil Management Systems I  Credits: 3 (3-0-0)
Course Description: Principles of crop, soil management emphasizing environmental factors influencing crop growth and development, interactions with soil organic matter.
Prerequisites: (HORT 100 or SOCR 100) and (SOCR 240).
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 421 Crop and Soil Management Systems II  Credits: 4 (3-2-0)
Course Description: Principles of crop and soil management with emphasis on soil erosion control, water conservation, and plant-water relationships.
Prerequisites: (HORT 100 or SOCR 100) and (SOCR 240).
Registration Information: Must register for lecture and laboratory.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 424 Topics in Organic Agriculture  Credits: 3 (3-0-0)
Also Offered As: HORT 424.
Course Description: Examination of issues specific to organic food production systems and marketing.
Prerequisites: (AREC 202 or ECON 202) and (AREC 328 and SOCR 240) and (HORT 100 or SOCR 100) and (SOCR 171 or HORT 171).
Registration Information: Credit not allowed for both SOCR 424 and HORT 424.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.
SOCR 430 Applications of Plant Biotechnology Credits: 3 (3-0-0)  
**Course Description:** Current and potential applications of DNA-based biotechnology in crop agriculture and other plant disciplines.  
**Prerequisite:** SOCR 330.  
**Term Offered:** Fall.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  
**SOCR 440 Pedology Credits:** 4 (2-3-1)  
**Course Description:** Process of soil formation, characterization, classification of soils; soil survey methods.  
**Prerequisite:** None.  
**Registration Information:** Must register for lecture, laboratory and recitation.  
**Term Offered:** Fall.  
**Grade Modes:** S/U within Student Option, Trad within Student Option.  
**Special Course Fee:** No.  
**SOCR 441 Soil Ecology Credits:** 3 (2-3-0)  
**Course Description:** An integrative, hands-on experience in the theory and application of ecology principles to the soil environment.  
**Prerequisite:** SOCR 455.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  
**SOCR 442 Forest and Range Soils Credits:** 3 (3-0-0)  
**Course Description:** Soil and water relationships in forest and rangeland ecosystems; significant properties in their management.  
**Prerequisite:** None.  
**Term Offered:** Fall.  
**Grade Modes:** S/U within Student Option, Trad within Student Option.  
**Special Course Fee:** No.  
**SOCR 445 Soil Microbiology Credits:** 3 (3-0-0)  
**Course Description:** Microbial activities in agricultural, forest, and grassland soils; in soil-plant relationships; and in maintenance of environmental quality.  
**Prerequisite:** MIP 300 or SOCR 240.  
**Term Offered:** Fall.  
**Grade Modes:** S/U within Student Option, Trad within Student Option.  
**Special Course Fee:** No.  
**SOCR 456 Soil Microbiology Laboratory Credit:** 1 (0-3-0)  
**Course Description:** Techniques used in study of ecology and activities of soil microorganisms.  
**Prerequisite:** SOCR 455, may be taken concurrently.  
**Term Offered:** Fall.  
**Grade Modes:** S/U within Student Option, Trad within Student Option.  
**Special Course Fee:** No.  
**SOCR 460 Plant Breeding Credits:** 3 (2-0-1)  
Also Offered As: HORT 460.  
**Course Description:** Theory and practice of plant breeding using principles of genetics and related sciences.  
**Prerequisite:** BZ 350, may be taken concurrently or LIFE 201A, may be taken concurrently or SOCR 330, may be taken concurrently.  
**Registration Information:** Must register for lecture and recitation.  
**Term Offered:** Fall (odd years).  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  
**SOCR 461 Plant Breeding Laboratory Credit:** 1 (0-2-0)  
Also Offered As: HORT 461.  
**Course Description:** Techniques and procedures used in public and commercial plant breeding programs.  
**Prerequisite:** SOCR 460, may be taken concurrently or HORT 460, may be taken concurrently.  
**Registration Information:** Credit not allowed for both SOCR 461 and HORT 461.  
**Term Offered:** Fall (odd years).  
**Grade Modes:** S/U within Student Option, Trad within Student Option.  
**Special Course Fee:** No.  
**SOCR 467 Soil and Environmental Chemistry Credits:** 3 (3-0-0)  
**Course Description:** Fundamental principles of soil chemistry with respect to environmental reactions between soils and other natural materials and priority pollutants.  
**Prerequisite:** CHEM 335.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  
**SOCR 470 Soil Physics Credits:** 3 (3-0-0)  
**Course Description:** Physical properties of soils emphasizing mechanical composition, moisture, aeration, temperature, and structure related to management, plant growth.  
**Prerequisite:** SOCR 240 or GEOL 232.  
**Term Offered:** Fall.  
**Grade Modes:** S/U within Student Option, Trad within Student Option.  
**Special Course Fee:** No.  
**SOCR 471 Soil Physics Laboratory Credit:** 1 (0-3-0)  
**Course Description:** Familiarization of techniques and equipment used in evaluation of soil physical properties.  
**Prerequisite:** SOCR 470, may be taken concurrently.  
**Term Offered:** Fall.  
**Grade Mode:** S/U Sat/Unsat Only.  
**Special Course Fee:** No.  
**SOCR 475 Global Challenges in Plant and Soil Science Credits:** 3 (3-0-0)  
**Course Description:** Evaluation of case studies to define problems and develop solutions to address global challenges in plant and soil science.  
**Prerequisites:** (SOCR 240 or GEOL 122) and (LIFE 102 or BZ 120).  
**Term Offered:** Spring (even years).  
**Grade Modes:** S/U within Student Option, Trad within Student Option.  
**Special Course Fee:** No.  
**SOCR 478 Environmental Soil Sciences Credits:** 3 (3-0-0)  
**Course Description:** Chemical, biological, and physical aspects of prevention and remediation of soil and water pollution; environmental impact assessment.  
**Prerequisites:** SOCR 470 and SOCR 467, may be taken concurrently.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.  
**SOCR 479 Environmental Soil Science Laboratory Credit:** 1 (0-3-0)  
**Course Description:** Laboratory and field studies of soil and groundwater contamination, including monitoring and remediation.  
**Prerequisite:** SOCR 478, may be taken concurrently.  
**Registration Information:** Required field trips.  
**Term Offered:** Spring.  
**Grade Mode:** Traditional.  
**Special Course Fee:** No.
SOCR 480A6  Environmental Measurement with Arduino  Credit: 1 (0-2-0)
Course Description: An instrumentation laboratory on environmental and weather measurement using the Arduino microcontroller.
Prerequisite: PH 110 or SOCR 322 or SOCR 522.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 486 Practicum  Credits: Var[1-4]
Course Description: Directed experiences in the application of soil and crop science principles.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 490 Hydrus-1D Workshop  Credit: 1 (0-0-1)
Course Description: Using Hydrus-1D software for flow and transport of water, heat, and chemicals in soil.
Prerequisite: SOCR 470.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 492 Seminar  Credit: 1 (0-0-1)
Course Description: Prerequisite: None.
Term Offered: Fall.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 495 Independent Study  Credits: Var[1-18]
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 496 Group Study  Credits: Var[1-18]
Course Description: Prerequisite: None.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 498 Undergraduate Research  Credits: Var[1-6]
Course Description: Research in soil and crop sciences.
Prerequisite: None.
Registration Information: Written consent of instructor.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 514 Agricultural Experimental Design and Analysis  Credits: 4 (3-3-0)
Also Offered As: STAT 514.
Course Description: Design and implementation of agricultural experiments and statistical analysis of resulting data.
Prerequisite: STAT 201 or STAT 301 or STAT 307 or ERHS 307.
Registration Information: Must register for lecture and laboratory. Credit allowed for only one of the following: SOCR 414, SOCR 514, STAT 302, or STAT 514.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 522 Micrometeorology  Credits: 3 (3-0-0)
Course Description: Microenvironments; physics of environmental variables; plant canopy microclimate; evapotranspiration; surface-atmosphere exchange; instrumentation.
Prerequisite: PH 100 to 499 - at least 3 credits.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 530 Scientific Writing  Credit: 1 (1-0-0)
Also Offered As: BSPM 530.
Course Description: Skills necessary to prepare complete scientific journal articles including writing, editing, and literature searching and assessment.
Prerequisite: None.
Registration Information: Credit not allowed for both SOCR 530 and BSPM 530.
Term Offered: Spring.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 535 Origin and Evolution of Cultivated Plants  Credits: 3 (3-0-0)
Course Description: Origin of crops from viewpoints of archaeology, history, botany, and taxonomy, and continued evolution of plants under cultivation.
Prerequisite: SOCR 330.
Term Offered: Fall (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 540 Soil-Plant-Nutrient Relationships  Credits: 3 (3-0-0)
Course Description: Soil and plant factors affecting nutrient uptake, mechanistic models of uptake, availability and functions of essential elements, diagnostic techniques.
Prerequisite: SOCR 350.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.

SOCR 550 Advanced Soil Genesis  Credits: 3 (3-0-0)
Course Description: Modern concepts of specific mechanisms involved in formation of genetic soil groups and their relationship to environmental factors.
Prerequisite: SOCR 440.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.
SOCR 567 Environmental Soil Chemistry Credits: 4 (3-0-1)
Course Description: The chemistry of terrestrial environments and the interactions of soil constituents with bacteria, nutrients, and pollutants.
Prerequisite: CHEM 335.
Registration Information: Credit not allowed for SOCR 467 and SOCR 567.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 570 Plant Breeding for Drought Tolerance Credit: 1 (1-0-0)
Course Description: Principles and practices of evaluation, selection and cultivar development for crops in drought-stress environments with an emphasis on agronomic crops.
Prerequisites: SOCR 330 and SOCR 460.
Registration Information: Offered as an online course only.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 571 Foundations of Soil Science Credits: 2 (2-0-0)
Course Description: Importance of soils in ecology and earth system science with regard to the study and management of the soil resource.
Prerequisite: SOCR 240.
Term Offered: Spring.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 577 Principles/Components: Precision Agriculture Credits: 3 (2-2-0)
Course Description: Principles and components of precision agriculture, including GPS, GIS, remote sensing, and their applications in soil and crop management.
Prerequisite: SOCR 100 to 499 - at least 3 credits or CS 100 to 499 - at least 3 credits.
Registration Information: Must register for lecture and laboratory. Credit not allowed for both SOCR 577 and SOCR 377. Required field trips.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: Yes.

SOCR 620 Modeling Ecosystem Biogeochemistry Credits: 3 (2-3-0)
Course Description: Design and build biogeochemical process and ecosystem models with GUI-based software. Analyze and test models and interpret experimental data.
Prerequisites: (ECOL 505 or LAND 220 or LIFE 220 or SOCR 240) and (MATH 155 or MATH 160).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 640 Crop Physiology Credit: 1 (1-0-0)
Course Description: Developmental, physiological, and biochemical determinants of crop yields as controlled by genetic and environmental effects.
Prerequisite: BZ 440.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 650 Research Proposal Development Credit: 1 (1-0-0)
Course Description: Skills to develop and write an effective scientific research proposal.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Graduate standing.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 670 Terrestrial Ecosystems Isotope Ecology Credits: 3 (2-2-0)
Course Description: Isotope distribution in biogeochemical cycles, research topics in biosphere-atmosphere interactions; lab experience with isotope techniques.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Required field trips.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 675 Presentations for Scientific Audiences Credit: 1 (1-0-0)
Course Description: Organization and presentation of scientific information to audiences in oral and poster format.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 699 Thesis Credits: Var[1-18]
Course Description: 
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Terms Offered: Fall, Spring, Summer.
Grade Mode: Instructor Option.
Special Course Fee: No.

SOCR 720 Advanced Plant Breeding Credits: 4 (4-0-0)
Course Description: Systems of mating and selection in plants to maximize genetic gain. Evaluation of heterosis, germplasm diversity, strategies, and new technologies.
Prerequisites: (SOCR 460 or HORT 460) and (STAT 100 to 499 - at least 3 credits).
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 720A Advanced Plant Breeding: Methods Credits: 2 (2-0-0)
Course Description: Historical perspectives in plant breeding, plant reproduction, genetic gain, breeding and selection systems in self- and cross-pollinated plants.
Prerequisites: (SOCR 460 or HORT 460) and (STAT 100 to 799 - at least 3 credits).
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.
SOCR 720B Advanced Plant Breeding: Tools Credits: 2 (2-0-0)
Course Description: Plant breeding strategies, genotype x environment interaction, field plot and genomic tools, breeding for pest resistance, stress tolerance, quality.
Prerequisites: (SOCR 460 or HORT 460) and (STAT 100 to 799 - at least 3 credits).
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 725 Quantitative Inheritance in Plant Breeding Credits: 3 (2-2-0)
Course Description: Quantitative genetic structure of populations, recognition of genetic, environmental variance. Methods of dealing with quantitatively inherited traits.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Registration Information: Must register for lecture and laboratory.
Term Offered: Spring (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 730 Topics in Plant Breeding and Genetics Credit: 1 (1-0-0)
Course Description: Current literature regarding mechanisms used for plant improvement.
Prerequisite: None.
Restriction: Must be a: Graduate, Professional.
Term Offered: Fall.
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 731 Plant Breeding Data Management Credit: 1 (1-0-0)
Course Description: Principles and best practices for optimal data management for plant breeding and other data-intensive research programs.
Prerequisite: None.
Registration Information: Must have taken three credits in computer science.
Term Offered: Fall (even years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 740 Plant Molecular Genetics Credits: 3 (3-0-0)
Also Offered As: BSPM 740.
Course Description: Advances in study of organization and function of nuclear and organelar genomes, gene expression in higher plants, and plant-microbe interactions.
Prerequisites: BC 351 and SOCR 330.
Restriction: Must be a: Graduate, Professional.
Registration Information: Credit not allowed for both SOCR 740 and BSPM 740.
Term Offered: Fall (odd years).
Grade Mode: Traditional.
Special Course Fee: No.

SOCR 755 Advanced Soil Microbiology Credits: 3 (3-0-0)
Course Description: Ecology of soil microorganisms emphasizing population and activity relationships, nitrogen fixation, and microbe-pesticide interactions.
Prerequisite: MIP 624 or SOCR 455.
Restriction: Must be a: Graduate, Professional.
Term Offered: Spring (even years).
Grade Modes: S/U within Student Option, Trad within Student Option.
Special Course Fee: No.