SCSC - Soil and Crop Sciences

Courses

SCSC 101 Introduction to Soil and Crop Science
Credit 1. 1 Lecture Hour.
Brief summary of sciences of agronomic crops, soils and water; management, production and processing of various crops; education, employment and research pertaining to respective professions.

SCSC 105 World Food and Fiber Crops
Credits 3. 2 Lecture Hours. 2 Lab Hours.
(AGRI 1307, 1407) World Food and Fiber Crops. Plant relationships, structure and development; environmental factors affecting plants; technological aspects of agricultural practices; food production for an increasing population.*

SCSC 201 Great Plains Settlement and Farming
Credits 3. 3 Lecture Hours.
American Indian hunting and farming; transformation by Manifest destiny, Homestead Act, railroads, Indian Wars, U.S. Army, crops and farm families; effects of World Wars, Great Depression, Dust Bowl, irrigation, fertilization, pest controls, precision farming.

SCSC 205 Problem Solving in Plant and Soil Systems
Credits 3. 2 Lecture Hours. 2 Lab Hours.
Problems in management of soils, crops, and natural resources; problem solving skills including collecting, interpreting, using and communicating scientific and nonscientific data.

SCSC 291 Research
Credits 1 to 3. 1 to 3 Lecture Hours.
Research conducted under the direction of faculty member in agronomy. May be repeated 2 times for credit.
Prerequisites: Freshman or sophomore classification and approval of instructor.

SCSC 301 Soil Science
Credits 4. 3 Lecture Hours. 2 Lab Hours.
Evaluation of the nature and properties of soils; explanation of the various soils, their components and roles in the environment using the scientific methods and technology.
Prerequisite: Junior or senior classification, or approval of instructor.*

SCSC 302 Recreational Turf
Credits 3. 3 Lecture Hours.
Principles underlying construction and maintenance practices for turf facilities including athletic fields, golf courses, parks and home lawns; aesthetic, safety and economic aspects of turf varieties, soil conditions, plant protectants and maintenance equipment.
Prerequisite: Biology or approval of instructor.

SCSC 303 Crop Ecology
Credits 4. 3 Lecture Hours. 2 Lab Hours.
Ecology of species adaptation and selection and management principles; crop establishment, growth and development, mineral nutrition, productivity and sustainability.
Prerequisite: SCSC 105.*

SCSC 304 Plant Breeding and Genetics
Credits 3. 3 Lecture Hours. 0 Lab Hours.
Genetic improvement of crops by hybridization and selection; special breeding methods and techniques applicable to naturally self-pollinated, cross-pollinated and asexually reproduced plants.
Prerequisite: SCSC 105.*

SCSC 305 Production Agronomy Experiences
Credit 1. 2 Lab Hours.
Agronomy industry practices related to crop production; site visits in Texas and in the Mississippi Delta include a review of farming equipment, conservation agriculture practices, agro-chemical distribution and sales, grain product processing and distribution and on-farm management techniques.
Prerequisites: Junior or senior classification or approval of instructor.

SCSC 306 Grain, Fiber and Oilseed Crops
Credits 4. 3 Lecture Hours. 2 Lab Hours.
Geographical distribution, classification, physiology, principles of production, use of grain, fiber and oilseed crops and marketing.
Prerequisites: SCSC 105 and SCSC 301.*

SCSC 307 Crop Biology and Physiology
Credits 4. 3 Lecture Hours. 2 Lab Hours.
Emphasis on seed biology, germination, development of cells and tissues, anatomy, and growth and development of crop plants; plant hormones and tropisms, membranes and membrane transport, water absorption and transport through plants, photosynthesis, respiration and carbohydrate metabolism, and flowering; environmental effects on crop adaptation, growth, development, and productivity.
Prerequisites: SCSC 205, junior or senior classification, or approval of instructor.

SCSC 308 Forage Crops
Credits 3. 3 Lecture Hours.
Description, analysis and evaluation of forage systems in relation to livestock and wildlife production and environmental conservation; principles of selection and management of establishment, weeds, nutrients, grazing and harvest for introduced species.
Prerequisite: Junior or senior classification or approval of instructor.*

SCSC 309 Water in Soils and Plants
Credits 4. 3 Lecture Hours. 2 Lab Hours.
Fundamentals of plant water use, and water movement and storage in soils; evapotranspiration, plant water requirements and irrigation scheduling; issues impacting irrigation and water quality; techniques for measuring soil and plant water relations.
Prerequisite: Junior or senior classification, or approval of instructor.

SCSC 310 Soil Morphology and Interpretations
Credits 2. 1 Lecture Hour. 3 Lab Hours.
Field study of morphological features of soil profiles and the morphological characterization of important soils of Texas in relation to soil use and management.
Prerequisite: SCSC 301 or registration therein.*

SCSC 311 Principles of Crop Production
Credits 3. 3 Lecture Hours.
Review of plant physiology and crop adaptation to mesoclimates; crop management factors of planting, pest control, plant nutrition, irrigation, GIS, and harvesting techniques; special units on organic farming, conservation agriculture, farming in low-rainfall climates, and bioenergy crops; influence of markets, government policies, and the global economy on cropping strategies.
Prerequisites: SCSC 307, junior or senior classification, or approval of instructor.
SCSC 312 Introductory Turfgrass Management Laboratory
Credit 1. 1 Lab Hour.
Fundamentals of turfgrass anatomy, growth habit, identification and characteristics of cool- and warm-season turfgrass species; understanding of seed quality and labeling, pesticide safety, handling, and application, and fertilizer sources, safety, and application; specialized equipment used in the turfgrass industry.
Prerequisite: SCSC 302 or registration therein.

SCSC 314 Life and Physical Environments
Credits 3. 3 Lecture Hours.
Description of physical environments in which living organisms reside; interaction and adaptation of plants, animals and humans to their physical environments; survival in extreme environments; creating livable artificial environments on earth and in space.
Prerequisite: Junior or senior classification.

SCSC 330 Social and Ethical Aspects of International Cropping Systems
Credits 3. 3 Lecture Hours. 0 Lab Hours.
Philosophical basis of ethical decisions; includes slavery, war, population growth, migration, farm workers, chemical inputs, genetically modified organisms, soil and water conservation and protection of wild species.
Prerequisite: Junior or senior classification.

SCSC 401/FIVS 401 Forensic Soil Science
Credits 3. 2 Lecture Hours. 2 Lab Hours.
Examination of soils biology, chemistry and physical attributes to solve crimes; soil and geologic characteristics associated with crime scene examination; physical, biological and chemical characteristics and use of trace evidence.
Prerequisite: Junior or senior classification or approval of instructor.
Cross Listing: FIVS 401/SCSC 401.

SCSC 402 Crop Stress Management
Credits 4. 3 Lecture Hours. 2 Lab Hours.
Identification, measurement, biology, physiology and management of crop stress; limitations of specific environments to crop productivity; morphological and physiological crop stress response mechanisms.
Prerequisites: SCSC 307, junior or senior classification, or approval of instructor.

SCSC 405 Soil and Water Microbiology
Credits 4. 3 Lecture Hours. 2 Lab Hours.
Roles of soil and water microorganisms in the sustainability and productivity of various ecosystems with specific emphasis on plant-microbial interactions, nutrient cycling, degradation of pesticides and other xenobiotics, generation of trace gases, and soil and water quality; hands-on laboratory experience with current techniques in soil and water microbiology.
Prerequisites: Junior or senior classification, or approval of instructor.

SCSC 410 International Agricultural Systems
Credits 3. 3 Lecture Hours.
Contrast modern agriculture systems with those in developing countries; emphasis on natural resources and technologies interacting with economic and social development on a global scale.
Prerequisite: Junior or senior classification, or approval of instructor.

SCSC 420 Brazilian Agriculture and Food Production Systems
Credits 3 to 6. 3 to 6 Lecture Hours.
Comparison and study of Brazilian and U.S. agriculture and culture related to soil, water, and forest conservation and management in Brazil; tour and learn about Amazon River, rain forest, Brasilia, farm, ranch, and floral production systems, agricultural cooperatives and research, sugar and alcohol production, phosphate mining and production; visit points of interest.
Prerequisite: Junior or senior classification or approval of instructor.

SCSC 421 International Agricultural Research Centers - Mexico
Credits 3. 3 Lecture Hours.
International agricultural research; CIMMYT interaction; modern and underdeveloped tropical agricultural systems; introduction to Mexican culture; critical evaluation of complex and international agricultural issues and research programs.
Prerequisites: Junior or senior classification and approval of instructor.

SCSC 422 Soil Fertility and Plant Nutrient Management
Credits 3. 3 Lecture Hours.
Chemical and biological reactions in soils that influence nutrient availability to plants; environmental aspects associated with nutrient availability and fertilization, especially for nitrogen (N) and phosphorus (P).
Prerequisites: SCSC 301, junior or senior classification, or approval of instructor.

SCSC 423 Natural Resources and Agricultural Sustainability in UK
Credits 3. 3 Lecture Hours.
Environmental impacts and sustainability of United Kingdom and U.S. agriculture compared; soil, water, crop, and environmental management; conservation of watersheds; production of hydropower; sustainable use of water resources; cultural immersion.
Prerequisites: Junior or senior classification and approval of instructor.

SCSC 424 Biocatalysts for Environmental Remediation
Credits 2. 2 Lecture Hours.
Biosensors and biotransformations for environmental analysis and degradation; biodegradation of xenobiotics; bioremediation strategies for contaminated environments; microorganisms, soil and water conservation and protection of wild species.
Prerequisites: SCSC 301 and approval of instructor.

SCSC 425 Forensic Forensics
Credits 3. 3 Lecture Hours.
Forensic science techniques; analysis of evidence; crime scene investigation; legal aspects of forensic science; case studies.
Prerequisites: SCSC 301 and approval of instructor.

SCSC 426 Natural Resources and Agricultural Sustainability in Latin America
Credits 3. 3 Lecture Hours.
Examination of how environmental stresses, genetics, and cultural management practices influence the growth, development, and physiology of turgrasses; exploration of how turf communities function within urban landscapes; introduction to environmental, social, and political issues encountered when managing these areas.

SCSC 427 Sports Field Construction
Credits 4. 3 Lecture Hours. 3 Lab Hours.
Development of knowledge, skills, and experiences for the design and construction of a turfgrass-based sports field; case studies and visits to model fields, guest lectures from sports field owners, designers, and construction company managers; hands-on construction of a small-scale sand-based sports field.
Prerequisites: SCSC 309, junior or senior classification, or approval of instructor.

SCSC 428 Advanced Turf Ecology and Physiology
Credits 3. 3 Lecture Hours.
Examination of how environmental stresses, genetics, and cultural management practices influence the growth, development, and physiology of turgrasses; exploration of how turf communities function within urban landscapes; introduction to environmental, social, and political issues encountered when managing these areas.

SCSC 429 Turf Management Systems
Credits 4. 3 Lecture Hours. 2 Lab Hours.
Development of turf management plans for large turfgrass sites including parks, golf courses and sports facilities; use of case studies to critically analyze turf management programs.
Prerequisite: SCSC 428.
SCSC 430 Turfgrass Maintenance
Credits 4. 3 Lecture Hours. 2 Lab Hours.
Activities in a day-to-day turfgrass maintenance operation; decision-making in culture, equipment, irrigation systems, budgets, records and labor management. Laboratory includes principles and actual mechanical procedures involved in maintaining turfgrass.
Prerequisite: SCSC 428 or approval of instructor.*

SCSC 432 Soil Fertility and Plant Nutrient Management Laboratory
Credit 1. 3 Lab Hours.
Methods used in soil testing, fertilizer recommendations, chemical and physical properties of soils, and determination of specific characteristics of a collected and analyzed soil sample.
Prerequisites: SCSC 301; SCSC 422 or registration therein, junior or senior classification, or approval of instructor.*

SCSC 435 Ecology of Agrichemicals in Field Crops and Turf
Credits 3. 3 Lecture Hours.
History, rationale, and ecological consequences of irrigation, fertilization, and pesticide applications in crop production; methods to determine the fate of agrichemicals in water, soil, and food; assessment of the risks and benefits of agrichemical use to human health, farm economy and natural habitats.
Prerequisite: CHEM 101.

SCSC 441 Crop Production Systems
Credits 3. 3 Lecture Hours.
Integration of crop production and management concepts through a systems approach; application of concepts using case studies and team projects.
Prerequisite: Senior classification or approval of instructor.

SCSC 444 Forage Ecology and Management
Credits 3. 3 Lecture Hours.
Investigation of multidisciplinary approaches toward the development of integrated forage, livestock, and wildlife production systems that are economically feasible and environmentally sustainable.
Prerequisite: Junior or senior classification or approval of instructor.

SCSC 445 Soil Physics
Credits 3. 2 Lecture Hours. 3 Lab Hours.
Fundamentals of soil physics; soil texture, structure, water, air and thermal relations and their relations to the solution of problems in crop production, irrigation, pollution and engineering.
Prerequisite: 9 hours of soils and physics with minimum of 3 hours of each, or approval of instructor.*

SCSC 446 Weed Management and Ecology
Credits 4. 3 Lecture Hours. 2 Lab Hours.
Practical information related to weed management and ecology for various vegetative systems to include turf and agronomic crops; calibration of applicators, herbicide labels, mode of action of herbicides, herbicide-resistant weed management.
Prerequisites: CHEM 222, SCSC 307, junior or senior classification, or approval of instructor.

SCSC 450 Chemical Weed Control
Credits 3. 3 Lecture Hours.
Fundamentals of chemical weed control; relationships of families of herbicides, basis for selectivity of herbicides, fate of herbicides in plants and soils and effect of herbicidal additives.
Prerequisites: CHEM 222 or CHEM 227 and CHEM 237; approval of instructor.

SCSC 452 Chemical Weed Control Laboratory
Credit 1. 0 Lecture Hours. 2 Lab Hours.
Important weed problems in Texas; herbicides and equipment used for herbicidal application.
Prerequisite: SCSC 450 or registration therein.*

SCSC 455 Environmental Soil and Water Science
Credits 3. 3 Lecture Hours.
Discussion of physical, chemical, and biological properties of soil and water and the impact on productivity and sustainability of various ecosystems; application of the knowledge of properties and soil processes to develop and evaluate strategies for protecting and/or improving soil and water quality.
Prerequisite: SCSC 301 or approval of instructor.

SCSC 458 Watershed and Water Quality Management
Credits 3. 3 Lecture Hours.
Land use impact on surface and ground water chemistry; legislation impacting water quality; surface and groundwater impairment and restoration.
Prerequisite: CHEM 101 or equivalent or approval of instructor; junior or senior classification.

SCSC 460 Problems in Agronomy - Plants
Credit 1. 1 Lecture Hour.
Development of writing skills in the plant science aspect of agronomy; instruction in drafting, editing, and revising technical and popular reports for specific audiences; critical thinking, analytical reading, peer review, and discussion are emphasized.
Prerequisite: Junior or senior classification.

SCSC 461 Problems in Agronomy - Soils
Credit 1. 1 Lecture Hour.
Development of writing skills in the soil science aspect of agronomy; instruction in drafting, editing, and revising technical and popular reports for specific audiences; critical thinking, analytical reading, peer review, and discussion are emphasized.
Prerequisite: Junior or senior classification.

SCSC 481 Senior Seminar
Credits 2. 2 Lecture Hours.
Capstone course bringing together student experiences, exams, and exercises necessary for completing and assessing curriculum program learning outcomes.
Prerequisite: Senior classification.

SCSC 484 Internship
Credits 1 to 3. 1 to 3 Lecture Hours.
Practical on-the-job experience in the student's area of specialization.
Prerequisites: Junior or senior classification; approval of instructor; 2.0 or better GPR in major and overall.

SCSC 485 Directed Studies
Credits 1 to 4. 1 to 4 Lecture Hours.
For advanced undergraduates to permit field or laboratory investigation or study of subject matter not included in established courses.
Prerequisite: 10 hours of junior and senior agronomy or approval of instructor.

SCSC 489 Special Topics in...
Credits 1 to 4. 1 to 4 Lecture Hours. 0 to 4 Lab Hours.
Selected topics in an identified area of agronomy. May be repeated for credit.
Prerequisite: Approval of department head.*
SCSC 491 Research

Credits 1 to 3. 1 to 3 Lecture Hours.
Research conducted under the direction of faculty member in agronomy. May be repeated 2 times for credit. Registration in multiple sections of this course are possible within a given semester provided that the per semester credit hour limit is not exceeded.

Prerequisites: Junior or senior classification and approval of instructor.