### SCSC - SOIL AND CROP SCIENCES (SCSC)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Lecture Hours</th>
<th>Lab Hours</th>
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<tbody>
<tr>
<td>SCSC 105</td>
<td>World Food and Fiber Crops</td>
<td>3</td>
<td>2</td>
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<td></td>
<td><em>(AGRI 1307 and AGRI 1107, AGRI 1407)</em> World Food and Fiber Crops.</td>
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<td></td>
<td>Plant relationships, structure and development; environmental factors affecting plants; technological aspects of agricultural practices; food production for an increasing population.</td>
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<td>SCSC 201</td>
<td>Great Plains Settlement and Farming</td>
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<td>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.</td>
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<td>SCSC 205</td>
<td>Problem Solving in Plant and Soil Systems</td>
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<td>Problems in management of soils, crops, and natural resources; problem solving skills including collecting, interpreting, using and communicating scientific and nonscientific data.</td>
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<td>SCSC 289</td>
<td>Special Topics In...</td>
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<td>Selected topics in an identified area of soil and crop sciences. May be repeated for credit.</td>
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<td>SCSC 291</td>
<td>Research</td>
<td>1 to 3</td>
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<td>Research conducted under the direction of faculty member in agronomy. May be repeated 2 times for credit.</td>
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<td><strong>Prerequisites:</strong> Freshman or sophomore classification and approval of instructor.</td>
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<td>SCSC 301</td>
<td>Soil Science</td>
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<td>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.</td>
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<td><strong>Prerequisite:</strong> Junior or senior classification, or approval of instructor.</td>
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<td>SCSC 302</td>
<td>Recreational Turf</td>
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<td></td>
<td>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.</td>
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<td><strong>Prerequisite:</strong> Biology or approval of instructor.</td>
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<td>SCSC 304</td>
<td>Plant Breeding and Genetics</td>
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<td>Genetic improvement of crops by hybridization and selection; special breeding methods and techniques applicable to naturally self-pollinated, cross-pollinated and asexually reproduced plants.</td>
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<td><strong>Prerequisite:</strong> SCSC 105 or SCSC 205, or approval of instructor.</td>
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<td>SCSC 305</td>
<td>Professional Development in Agronomy</td>
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<td>Enhancement of human relation skills related to a career in soil and crop sciences; field trip to Mississippi to interact with leadership from a global agricultural company; on-campus experiences to improve effective learning practices, job seeking and retention and setting and achieving near-term and long-term professional goals.</td>
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<td><strong>Prerequisites:</strong> Junior or senior classification or approval of instructor.</td>
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<td>SCSC 307</td>
<td>Crop Biology and Physiology</td>
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<td>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.</td>
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<td><strong>Prerequisites:</strong> SCSC 205, junior or senior classification, or approval of instructor.</td>
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<td>SCSC 309</td>
<td>Water in Soils and Plants</td>
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<td>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.</td>
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<td><strong>Prerequisite:</strong> Junior or senior classification, or approval of instructor.</td>
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<td>SCSC 310</td>
<td>Soil Morphology and Interpretations</td>
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<td>Field study of morphological features of soil profiles and the morphological characterization of important soils of Texas in relation to soil use and management.</td>
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<td><strong>Prerequisite:</strong> SCSC 301 or registration therein.</td>
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<td>SCSC 311</td>
<td>Principles of Crop Production</td>
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<td>Origin and development of major U.S. agronomic crops; crop and species adaptation; crop management factors such as cultivar selection, planting, pest control, plant nutrition, irrigation, harvesting; organic farming; conservation agriculture; bioenergy crops; influence of markets, government policies, and global economy on cropping strategies; provide an understanding of the major row and drill (agronomic) crops grown in the United States including barley, corn, cotton, grain sorghum, peanuts, rice, soybean and wheat.</td>
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<td><strong>Prerequisites:</strong> SCSC 105 or SCSC 205, junior or senior classification, or approval of instructor.</td>
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<td>SCSC 312</td>
<td>Professional Development in Turfgrass</td>
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<td>Includes but not limited to fertilizer, pesticide, irrigation calculations; turfgrass, insect and weed identification and management, soils and rootzone construction; irrigation system operation and auditing; sprayer and spreader operation and calibration; builds upon and allows application of information obtained in SCSC 302; designed to better prepare those intending to compete in the GCSAA and STMA Collegiate Turf Bowl competitions.</td>
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<td><strong>Prerequisite:</strong> SCSC 302 or registration therein.</td>
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<td>SCSC 315</td>
<td>Hemp Production and Utilization</td>
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<td>Advanced topics in principles and practices of producing hemp and its utilization in industrial, nutritional and therapeutic activities.</td>
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<td><strong>Prerequisite:</strong> Junior or senior classification.</td>
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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: Grade of C or better in FIVS 482.
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 3. 3 Lecture 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 406 Soil and Water Microbiology Laboratory
Credit 1. 2 Lab Hours.
Hands-on experience with current techniques for examining the types, numbers, activity and roles of soil and water microorganisms with specific application to the carbon, nitrogen and sulfur cycle; plant-microbial interactions; soil and water quality.
Prerequisites: SCSC 405 or concurrent enrollment; 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 411 Biotechnology for Crop Improvement
Credits 3. 3 Lecture Hours.
Use of biotechnology to improve agricultural, horticultural and forest crops; techniques and methods used and case studies where biotechnology has been used to alter traits such as pathogen resistance, protein or oil consumption, ripening, fertility and wood properties.
Prerequisite: BIOL 111 or equivalent.
Cross Listing: MEPS 411 and GENE 411.

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 427 Sports Field Construction
Credits 4. 3 Lecture Hours. 2 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 turfgrasses; 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 3. 3 Lecture Hours.
Effective leadership and management strategies, organizational structures, human resource management, employee training and motivational strategies, effective professional communication approaches with clientele, employees and within a leadership team within a turfgrass facility framework; emphases on ethics, professional development and life-long learning.
Prerequisite: SCSC 429 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 441 Advances in Agronomic Sciences
Credits 3. 3 Lecture Hours.
Synthesis, integration and extension of agronomic and related concepts for understanding the functioning and management of agricultural cropping systems.
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 446 Weed Management and Ecology
Credits 3. 2 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: BIOL 111, BIOL 101 or BIOL 113, junior or senior classification.

SCSC 453 Essentials for Weed Systematic Identification and Management in Agronomy
Credits 3. 3 Lecture Hours.
Fundamental understanding and hands-on training on the basics of plant weed identification and management; relevant to agronomy, turf, horticulture and rangeland science and vegetation identification and management.
Prerequisite: Junior or senior classification.

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, Water and Soil 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 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 0 to 4. 0 to 4 Other 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 0 to 4. 0 to 4 Other 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 0 to 4. 0 to 4 Other 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.