SCSC - SOIL AND CROP SCIENCES (SCSC)

SCSC 105 World Food and Fiber Crops
Credits 3. 2 Lecture Hours. 2 Lab Hours.
(AGRI 1307 and AGRI 1107, AGRI 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 289 Special Topics In...
Credits 0 to 4. 0 to 4 Other Hours.
Selected topics in an identified area of soil and crop sciences. May be repeated for credit.

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.

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.

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.

SCSC 308 Social and Ethical Aspects of International Cropping Systems
Credit 1. 2 Lab Hours.
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.

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.

SCSC 310 Soil Morphology and Interpretations
Credits 4. 3 Lecture Hours. 2 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.

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.

SCSC 312 Professional Development in Agronomy
Credits 1. 1 Lab Hour.
Incorporating 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.

SCSC 313 Research
Credits 1. 1 Lab Hour.
Research conducted under the direction of faculty member in agronomy. May be repeated 2 times for credit.

SCSC 320 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.

SCSC 321 Professional Development in Turfgrass
Credits 1. 1 Lab Hour.
Review of plant physiology and turfgrass adaptation to mesoclimates; turfgrass 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.

SCSC 322 Professional Development in Turfgrass
Credits 1. 1 Lab Hour.
Review of plant physiology and turfgrass adaptation to mesoclimates; turfgrass 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.

SCSC 323 Professional Development in Turfgrass
Credits 1. 1 Lab Hour.
Review of plant physiology and turfgrass adaptation to mesoclimates; turfgrass 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.

SCSC 324 Professional Development in Turfgrass
Credits 1. 1 Lab Hour.
Review of plant physiology and turfgrass adaptation to mesoclimates; turfgrass 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.

SCSC 325 Professional Development in Turfgrass
Credits 1. 1 Lab Hour.
Review of plant physiology and turfgrass adaptation to mesoclimates; turfgrass 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.

SCSC 326 Professional Development in Turfgrass
Credits 1. 1 Lab Hour.
Review of plant physiology and turfgrass adaptation to mesoclimates; turfgrass 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.

SCSC 327 Professional Development in Turfgrass
Credits 1. 1 Lab Hour.
Review of plant physiology and turfgrass adaptation to mesoclimates; turfgrass 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.

SCSC 328 Professional Development in Turfgrass
Credits 1. 1 Lab Hour.
Review of plant physiology and turfgrass adaptation to mesoclimates; turfgrass 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.

SCSC 329 Professional Development in Turfgrass
Credits 1. 1 Lab Hour.
Review of plant physiology and turfgrass adaptation to mesoclimates; turfgrass 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.

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.

SCSC 331 Professional Development in Agronomy
Credits 1. 1 Lab Hour.
Incorporating 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.

SCSC 332 Professional Development in Turfgrass
Credits 1. 1 Lab Hour.
Review of plant physiology and turfgrass adaptation to mesoclimates; turfgrass 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.

SCSC 333 Professional Development in Turfgrass
Credits 1. 1 Lab Hour.
Review of plant physiology and turfgrass adaptation to mesoclimates; turfgrass 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.

SCSC 334 Professional Development in Turfgrass
Credits 1. 1 Lab Hour.
Review of plant physiology and turfgrass adaptation to mesoclimates; turfgrass 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.

SCSC 335 Professional Development in Turfgrass
Credits 1. 1 Lab Hour.
Review of plant physiology and turfgrass adaptation to mesoclimates; turfgrass 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.

SCSC 336 Professional Development in Turfgrass
Credits 1. 1 Lab Hour.
Review of plant physiology and turfgrass adaptation to mesoclimates; turfgrass 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.
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 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/GENE 411 and GENE 411/MEPS 411.

SCSC 412 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 413 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 414 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 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 Crop Stress Management  
Credits 3. 3 Lecture 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 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 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 425 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 426 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.  
Prerequisite: SCSC 428.

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 431 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/GENE 411 and GENE 411/MEPS 411.

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 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 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 or 101, junior or senior classification.

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 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 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 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.