Course title and number  SCSC 105
Term                  Fall Spring 2013
Meeting times and location HPCT 103

Course Description and Prerequisites

This course will introduce students to plant relationships, structure, and development. They will also explore environmental factors affecting plants, the technological aspects of agricultural practices, and food production for an increasing population.

Prerequisites: None

Learning Outcomes or Course Objectives

1. Be able to conduct a valid experiment with replications, randomization, data collection, statistical analysis, data expression, and interpretation.
2. Identify, describe, and explain the major forms of malnutrition, especially related to infant mortality. Calculate and explain the demographic factors determining population growth and their relationship to malnutrition.
3. Describe the physiological processes of photosynthesis and photosynthate partitioning, the breeding techniques of selection and hybridization, and their relationship to high yield crop production in the Green Revolution.
4. Describe the major techniques, powers, and limitations of genetic engineering.

Instructor Information

Name              Dr. Harry Cralle
Telephone number  979-845-9634
Email address     heralle@tamu.edu
Office hours      TBA
Office location   HPCT 217B

Textbook and/or Resource Material

None listed.

Grading Policies

(A: 90-100%; B: 80-89%; C: 70-79%; D:60-69%; F: <60%)
Lecture Exam I (short/medium answers with calculations) – points and date TBA
Lecture Exam II (short/medium answers with calculations) – points and date TBA
Lecture Exam III (short/medium answers with calculations) – Final Exam Wed. May 6, 8:00 a.m. points TBA
Team Science Project (plant culture, measurements, statistical calculations, poster
construction and oral presentation of results) = 220 points

6 Team Lab Projects (dissections, problem solving, calculations) = 180 points (30 points/project)

LATE EXAMS AND PROJECTS REQUIRE PRIOR CONSENT OR OFFICIAL UNIVERSITY EXCUSE.

THERE WILL BE NO CURVE.

Attendance Policy

"The University views class attendance as the responsibility of an individual student. Attendance is essential to complete the course successfully. University rules related to excused and unexcused absences are located on-line at http://student-rules.tamu.edu/rule07."

Lecture Outline

I. World Food Supply: famine, malnutrition, and population
II. Foundations of Modern Crop Production
   A. Origin of agriculture as a genetic revolution
   B. The physiological basis of crop yields
      1. photosynthesis: location, light and dark reactions,
         Leaf Area Index and plant populations, leaf orientation
      2. photosynthetic partitioning: source-sink relationships and harvest index
   C. The Green Revolution
      1. traditional agriculture
      2. landrace plants of wheat: origin, agronomic traits, and production environment
      3. Green Revolution varieties: breeding, agronomic traits, and production environment
III. Biotechnology: genetic engineering and tissue culture:
   A. basic methodology
   B. a method of plant breeding

Lab Outline

Jan. 14-17: No labs
Jan. 22-25: Seeds, Vegetative Growth, and Reproduction (Lab Project #1)
Jan. 28-31: Doing Science I: Team Science Project Planting
Feb. 4-7: Plant Breeding I: Introduction (Lab Project #2)
Feb. 11-14: Plant Breeding II: Selection (Lab Project #3)
Feb. 18-21: Plant Breeding III: Hybridization (Lab Project #4)
Feb. 25-28: Doing Science II: Harvesting and Measurements of Height
March 4-7: Doing Science III: Measurements of Weight
March 11-14: Spring Break
March 18-21: Doing Science IV: Data Analysis using Excel
March 25-28: Doing Science V: Statistical Analysis (Lab Project #5)
April 1-4: DNA and The Basis of Genetic Engineering (Lab Project #6)
April 9-11: Poster Preparation and Lab Makeups
April 15-18: Poster Preparation and Lab Makeups
April 22-25: Presentation of Team Science Project

Americans with Disabilities Act (ADA)
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides
comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu

**Academic Integrity**

"An Aggie does not lie, cheat, or steal, or tolerate those who do."

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System.

*For additional information please visit: [http://aggiehonor.tamu.edu](http://aggiehonor.tamu.edu)*