

College: Arthur Temple College of Forestry and Agriculture

Department: Agriculture

Course Status: Existing; requires modification

Course Prefix and Number: AGN 110

Course Title: Crop Science

Course catalog description: Basic principles of plant growth as they relate to the production of major horticultural and agronomic crops. Two hours lecture, two hours lab per week.

Number of semester credit hours: 3

Estimated enrollment per year: 200

Course prerequisites: none

Couse is not available-online

Foundational Component Area: Life and Physical Sciences

Explain why this course fits into this foundation component area: Crop Science is the scientific study of plants produced for food, fiber, fuel, medicine, ornamental and recreational use. Students will learn basic plant physiology, anatomy and genetics focused on environmental and cultural practices related to crop production ecosystems to support the worlds growing population. In a hands-on laboratory students will learn solutions through scientific inquiry (scientific method) and learning modules related to plant growth and development.

Core Objectives:

Critical thinking: Critical thinking is borne of scientific inquiry. Students in lecture will learn basic concepts of crop science that can be applied in laboratory experiments via the scientific method (hypothesis, experiment, data interpretation and reporting findings). Students will receive instruction on how to develop hypothesis, conduct experiments, collect and analyze data along with instruction on writing a scientific report (introduction, materials & methods, results & discussion and conclusions/summary). Students will demonstrate critical thinking skills via two experiments (sexual and asexual propagation) conducted using the scientific method resulting in two scientific write-ups.



Communication Skills: Communication of results from scientific inquiry is essential and requires written, oral and visual presentation of results. Students will be instructed how to write scientific papers (experiment reports and mini literature review) and be shown how to properly site and reference sources. Additionally, students will be instructed on developing visual aids for a presentation and guidelines for developing an oral presentation. Students will demonstrate written skills using the scientific format (introduction, material and methods, results and discussion, conclusions) with written reports (Sexual and Asexual experiments). Students will write a mini literature review (Crop Report) demonstrating the correct format for citations and give a short oral presentation (5 to 7 minutes) with visual aids (PowerPoint).

Empirical and Quantitative Skills: Students will receive instruction in the laboratory on collection and analysis of data from experiments and problem solving skills necessary in production systems (seed rates, fertilizer and pesticide application). Students will practice empirical and quantitative skills in laboratory experiments and numerous laboratory problem sets (word problems and calculations) related to the cultural practices associated with crop production. Experiments will require students to demonstrate data collection skills (accurate measurements, synthesis of data, and presentation) and analysis of individual and pooled (class) data sets to formulate conclusions.

Teamwork: Through readings and lecture students in lab will receive instruction on the guidelines and dynamics of effective teamwork to accomplish a common goal. Laboratory experiments (asexual propagation, sexual propagation, transpiration and the crop journal) emphasize teamwork in set-up, maintenance, data collection and sharing of data as students form teams at the beginning of the experiment. Similarly, the crop journal requires students to work in teams to design, plant, maintain (water, fertilize, weed) and harvest crops resulting in a collaboratively written report.

CROP SCIENCE
AGN 110 Section 001, 020L
Fall 2014

Name:
Email:
Phone:
Office:
Office Hours:
Department: Agriculture
Class meeting time and place:

Course Description:

Basic principles of plant growth as they relate to the production of major horticultural and agronomic crops. Two hours lecture, two hours lab per week.

Program Learning Outcomes:

1. The student will demonstrate entry level skills needed for success in horticulture, agronomy and other related fields in the area of a) plant physiology and anatomy, b) practical experience in plant management systems, c) basic knowledge of plant genetics and reproduction, d) identification and knowledge of crops and e) management of soils and soilless media.
2. The student will demonstrate quantitative competence related to horticulture and agronomy.
3. The student will exhibit problem solving skills based on quantitative and analytical reasoning.
4. The student will demonstrate effective communication skills
5. The student will exhibit leadership and other interpersonal skills needed for career placement and advancement.

B.S. Horticulture Program Learning Outcomes (PLO)					
Proficiency Levels					
Course	PLO 1 Plant Science	PLO 2 Quantitative	PLO 3 Problem Solving	PLO 4 Communications	PLO 5 Leadership
AGN 110	I	B	B	B	B
	B-Basic	I-Intermediate	A-Advanced	M-Mastery	

General Education Core Curriculum Objectives/Outcomes (CO):

1. Students will demonstrate critical thinking skills via experiments conducted using the scientific method (*Critical Thinking*). (SLO 1-5)
2. Students will demonstrate written, oral and visual skills using the scientific format (introduction, material and methods, results and discussion, conclusions/summary) for written reports, oral presentations and visual presentations (*Communication Skills*). (SLO 3, 4 and 7)

3. Students will develop empirical and quantitative skills in numerous laboratory exercises (word problems and calculations) related to the cultural practices associated with crop production. (*Empirical and Quantitative Skills*) (SLO 6)
4. Students will demonstrate teamwork in maintenance of experiment and experimental plots. (*Teamwork*) (SLO 7)

Foundational Component Areas						
Component Area	Critical Thinking	Communication Skills	Empirical and Quantitative Skills	Teamwork	Social Responsibility	Personal Responsibility
Life and Physical Science	X	X	X	X		

Student Learning Outcomes (SLO):

Upon completion of this course, the students will be able to:

1. Recognize plant names and classification of plants (CO 1)
2. Understand form and function of plant morphology and anatomy (CO 1)
3. Explain plant propagation methods (sexual and asexual) (CO 1-4)
4. Summarize photosynthesis, respiration, and transpiration (CO 1)
5. Discuss water, soils and plant nutrition (CO 2)
6. Demonstrate ability to perform basic calculations related to production practices. (CO 3)
7. Demonstrate the skills necessary to function as a contributing team member in order to collect and present scientific data (CO 1, 2, & 4)

Text and Materials:

Plant Science: Growth, Development, and Utilization of Cultivated Plants. 5th Edition, by McMahon, Kofranek and Rubatzky. 2011 . Prentice Hall.

Course Requirements:

Quizzes/assignments ^Z	2%
Exam I	16%
Exam II	16%
Exam III	16%
Final (comprehensive) ^Y	16%
Laboratory ^X	<u>34%</u>
Total	100pts

^Z **Assignments are due at the beginning of class on the due date. Late assignments will not be accepted unless previous arrangements have been made due to extenuating circumstances.**

Attendance at the Les Reeves Lecture Series can be used as a substitution or replacement of a quiz or missed assignment.

^Y The final is comprehensive if your percentage on the final is higher than a previous exam score the final percentage will replace the lowest exam score.

^X There are a number of laboratory projects required during the semester. Failure to complete all laboratory projects will result in the failure of the course.

Course Calendar:

CROP SCIENCE Lecture & Laboratory Schedule				
Week	Lecture	Laboratory	Laboratory projects^Z	CO^Y
1	Introduction to crop science.	Adopt-a-plant & fertilizer calculations: CO 3 Instructor will demonstrate calculations for correct fertilizer application; similarly instructor will demonstrate basic data collection.	Adopt-a-plant	2, 3
			Fertilizer calculations I	1, 3
2	Naming and classification	Plant structures I: CO 1 Instructor will discussion the scientific method to develop critical thinking along with select readings.	Plant structures I	1, 3
			Fertilizer calculations II	1, 3
3	Structure of higher plants:	Plant structures II. CO 4 Reading and instructor lead discussion of effective teamwork organization and development.	Plant structures II	1, 3
4	Structure of higher plants cont.,	Plant structures exam, Vegetable garden, Produce / Nursery project: CO 2 Instructor will discuss the components of writing a scientific report.	Vegetable garden	2-4
			Produce / Nursery project	1, 2
5	Genetics	Sexual propagation expt.& seed calculations: for determining germination CO 2 Instructor will discuss and demonstrate how to create figures and tables for scientific report. CO 3 Instructor will demonstrate how to analyze data using Excel, in addition, the CO 3 Instructor will demonstrate calculations percentages and planting rates.	Sexual propagation expt.	1-4
			Seed calculations	1, 3

6	Sexual and Asexual propagation:	Crop paper. Produce / Nursery project due: CO 2: Instructor will demonstrate how to cite reference in a scientific written paper along with examples in select reading. Additionally, instructor will present the guidelines for an effective PowerPoint presentation	Crop paper	1, 2, 4
7	Plant chemistry and metabolism, Exam II	Asexual propagation:	Asexual propagation expt.	1-4
8	Photosynthesis	Plant Identification: Asexual propagation report due.	Plant identification walk	1, 3
9	Respiration	Transpiration project & Pesticide calculations: CO 3 Instructor will demonstrate calculations for determining pesticide application rates.	Transpiration project	1, 3, 4
			Pesticide calculations	1, 3
10	Transpiration	Plant identification exam	Plant identification exam	
11	Plant water relations, Exam III	Transpiration project due		
12	Soils	Terminate asexual propagation experiment		
13	Mineral nutrition	Crop paper and presentation due	Crop presentations	2
14	Management of plant pathogens	Asexual propagation report due.		
15	Planting, pruning and training, Final	Adopt -a-plant due, Vegetable garden journal due		

^Z Full description of each laboratory project listed below

^Y CO = core objective 1 = Critical thinking, 2 = Communication skills, 3 = Empirical and quantitative skills, 4 = Teamwork (see General Education Core Curriculum Objectives/Outcomes for full descriptions)

Laboratory projects:

1. Adopt-a-plant: Students will have the responsibility for the care of a plant for the duration of the semester observing its growth and development and producing a journal with data collected (CO 2 & 3; SLO 2 & 5)
2. Plant structures I: Students learn to recognize plant features which will aid in plant identification. (CO 1 & 3; SLO 2):

3. **Plant structures II:** Students will learn to recognize plant structures that are classified as organs. (CO 1 & 3; SLO 2)
4. **Vegetable garden:** Students will form teams to grow a number of crops and make observation of the growth and development of the crops and present their findings collaboratively in the form of a vegetable garden journal (CO 2-4; SLO 2, 3 & 7)
5. **Produce / Nursery project:** Students will visit the produce department or garden center to gain an understanding of the diversity of crops and where they are produced. (CO 1 & 2; SLO 1 & 2)
6. **Sexual propagation experiment:** Students will conduct an experiment to evaluate difference in seed germination rates and types of seed germination. (CO 1-4; SLO 3 & 7)
7. **Crop paper:** Student will select a specific crop and write a short literature review and oral presentation. (CO 1, 2, & 4; SLO 2, 3 & 5)
8. **Asexual propagation experiment:** Students will conduct an experiment evaluating the success of various plant materials to asexual propagation. (CO 1-4; SLO 3 & 7)
9. **Plant identification:** Students will learn to identify by scientific name common landscape plants. (CO 1 & 3; SLO 1)
10. **Transpiration project:** Students will determine (calculate) the volume of water transpired from a variety of plants. (CO 1, 3 & 4; SLO 4)
11. **Problem sets (Fertilizer calculations I, Fertilizer calculations II, Seed calculations and Pesticide calculations):** Students will learn basic calculations related to production practices of seeding, fertilizing and pesticide application. (CO 1 & 3; SLO 6)

The following projects are required. (34%)

	Due date
1. Plant structures exam	xx
2. Sexual propagation experiment (team project)	xx
3. Produce / Nursery project	xx
4. Crop Paper report and presentation	xx
5. Asexual propagation experiment (team project)	xx
6. Plant identification exam	xx
7. Adopt-a-plant	xx
8. Vegetable garden (team project)	xx
9. Transpiration project	xx

Problem sets:

	Due date
1. Fertilizer calculations I	xx
2. Fertilizer calculations II	xx
3. Seed calculations	xx
4. Pesticide calculations	xx

Exam Schedule:

Quizzes/assignments	TBA
Exam I	xx

Exam II	xx
Exam III	xx
Final	xx

Grading Policy:

Grades will be assigned according to the following scale:

- A = 90 - 100%
- B = 80 - 89.9%
- C = 70 - 79.9%
- D = 60 - 69.9%
- F < 59.9%

Student Conduct:

Classroom behavior should not interfere with the instructor's ability to conduct the class or the ability of other students to learn from the instructional program (see the Student Conduct Code, policy D-34.1). Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom. Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to the Early Alert Program. This program provides students with recommendations for resources or other assistance that is available to help SFA students succeed.

Responsible Use of Technology:

It is expected that all students will only use cell phones, PDAs, laptop computers, MP3 players and other technology outside of class time or when appropriate in class. Answering a cell phone, texting, listening to music or using a laptop computer for matters unrelated to the course may be grounds for dismissal from class or other penalties.

Students are expected to assist in maintaining a classroom environment which is conducive to learning. In order to assure that all students have an opportunity to gain from time spent in class, unless otherwise approved by the instructor, students are prohibited from using cellular phones or beepers, eating in class, making offensive remarks, reading newspapers, sleeping or engaging in any other form of distraction. Inappropriate behavior in the classroom shall result in, minimally, a request to leave the classroom.

Attendance Policy:

Attendance is the best way to succeed in this course. Regular and punctual attendance is expected for all classes, and other activities for which a student is registered. If a student has excessive absences, the instructor reserves the right not to give individual tutoring, special consideration regarding make-up work, or

other help the student needs because of missing class. Attendance will also play a crucial role in decisions concerning borderline final grades.

No make-up exams will be given. If an exam is missed, the student will take the final exam and the score received on the final will be substituted for the missed exam. If a student takes all the exams and the final exam grade is higher than a previous performance the final exam score will replace the lowest score of the previous three exams. If the final exam is the lowest score it will only count as the final exam score.

Excused Absences

Students may be excused from attendance for certain reasons, among these are absences related to health, family emergencies, and student participation in certain university-sponsored events. However, students are responsible for notifying their instructors in advance whenever possible for excusable absences.

Students are responsible for providing timely documentation satisfactory to the instructor for each absence. Students with acceptable excuses may be permitted to make up work for absences to a maximum of three weeks of a semester when the nature of the work missed permits. Whether excused or unexcused, a student is still responsible for all course content and assignments.

Academic Integrity (A-9.1)

Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

Definition of Academic Dishonesty

Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one's paper without giving the author due credit.

Please read the complete policy at
http://www.sfasu.edu/policies/academic_integrity.asp

Integrity and professionalism are expected at this level of education. Unauthorized collaboration on assignments or projects, as well as dishonesty on exams and quizzes will not be tolerated. Suspected cases of cheating or plagiarism in class and labs as well as grade disputes and appeals will be handled according to the academic regulations of the University. **If it is determined cheating occurred, the student will be dismissed and fail the course**

Withheld Grades Semester Grades Policy (A-54)

Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.

Students with Disabilities

To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to <http://www.sfasu.edu/disabilityservices/>.