

**AGRI 1307.001**  
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**FUNDAMENTALS OF AGRONOMY**  
AGRICULTURE  
SCIENCE  
DIVISION OF ARTS AND SCIENCES  
SOUTH PLAINS COLLEGE  
FALL 2017  
Ron Presley

Agriculture Building  
Office number 100B  
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Preferred Contact: Through e-mail on Blackboard

**Course Description:**

Principles and practices in the development, production, and management of field crops, including plant breeding, plant diseases, soils, insect control, and weed control.

**Office Hours:**

Monday 2:00 – 4:00  
At Levelland

Tuesday 2:00 – 4:00  
At Reese Library

Thursday 2:00 – 4:00  
At Reese Library

Friday 9:00 – 12:00  
At Levelland

**TEXT:**

Custom Book for AGRI 1307: Acquaah, G. Principals of Crop Production 2nd Ed. Prentice Hall, Upper Saddle River, New Jersey. 2005.

**ATTENDANCE / TARDY POLICY:**

Punctual and regular attendance is expected of the student. If a student stops attending class, it is that student's responsibility to drop the course. See **GRADES** below for more information regarding attendance.

**MISSED EXAM POLICY:**

The lowest grade that is earned on any one of the first three exams will be dropped. The fourth and final exam cannot be missed. There will be no make-up exams.

**GRADES:**

3 EXAMS	300 PTS.
LAB	100 PTS.
MID-TERM PAPER	100 PTS.
ATTENDANCE (- 10)	100 PTS.
COMPREHENSIVE FINAL	200 PTS.
	800 PTS.

Each time a student has an un-excused absence, ten points will be deducted from the attendance points. Each time a student is late for class on two separate occasions, 10 points will be removed from the attendance points.

Each time a student is asked to stop talking or making noise during class on two separate occasions, ten points will be deducted from the attendance points. Upon the fifth occurrence of being asked to stop talking or making noise, the student will be told to leave the class and the day will be counted as an absence. If during lecture, a student must leave the classroom for personal reasons, the student will not be allowed back in the classroom during lecture.

- A - 90% - 720 PTS.
- B - 80% - 640 PTS.
- C - 70% - 560 PTS.
- D - 60% - 480 PTS.
- F - < 60%.

**CLASSROOM CONDUCT:**

Within the classroom setting, a “Business Etiquette” code of conduct will be expected of each student. Language and appearance that is appropriate to an adult oriented educational setting will be expected. Gentlemen will remove hoods, hats and caps. No tobacco usage. NO cell phones.

**EXAM SCHEDULE:** To Be Announced.

**MID-TERM PAPER:**

Each student will be expected to submit a Mid-Term paper concerning a topic to be assigned during the third class meeting. The paper will be due on **Wednesday; MARCH 8, at 11:00AM**. Late Papers will not be accepted under **ANY** circumstance. Each student will present their paper to the class. The grading scheme for the term paper is listed below:

I. Format:

- |   |            |
|---|------------|
| a. Cover Sheet                            | 5 points.  |
| b. Table of Contents / with page numbers  | 10 points. |
| c. Body (Minimum of 10 pages)             | 15 points. |
| d. End notes / References                 | 10 points. |
| e. Bibliography (Minimum of five sources) | 10 points. |
| f. Margins L1", TRB 3/4", double spaced   | 5 points.  |

II. Figures, tables and graphs.

- |   |           |
|---|-----------|
| No more than five or less than 2 1/2 pages. | 5 points. |
|---|-----------|

III. Grammar, punctuation and spelling. 5 points.

IV. Readability. 10 points.

V. Oral presentation.

- |                                   |       |             |
|-----------------------------------|-------|-------------|
| Instructor Evaluation. 25 points. | Total | 100 points. |
|-----------------------------------|-------|-------------|

**Course Description:** A survey course introducing the field of Agronomy. This course touches upon many of the diverse sub-fields and specialties within Agronomy. These include personal and career planning, the history of world agricultural crops, plant classification, morphology, the distribution of world crops, crop improvement and care. The course also includes extensive discussion study of past, present and future status of U.S. and World Agriculture. Students will be presented with an overview of the many challenges of which modern Agronomists must contend.

**CREDIT:** 3

**LECTURE:** 2

**LAB:** 2

**CORE OBJECTIVES TO BE ADDRESSED:**

**Communication** – to include effective written, oral and visual communication

**Critical Thinking Skills** – to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information

**Empirical and Quantitative Skills** – to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions

**Teamwork Skills** – to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal

**PREREQUISITES:** None

**Course Purpose/ Rational/Goal:** The primary objective of this course is for the student to develop an appreciation to Agronomy as one of the major fields of Agriculture. The student should come to realize that Agronomy encompasses many fields of study including soils, botany, geology, climatology, mathematics, physics, pathology, physiology, economics, politics, philosophy and much more.

The student should form an appreciation of Agronomy as an interesting and rewarding occupational field. A field in which a person can maximize his or her interest in crop production and work to benefit mankind.

**Course Requirements:** To maximize the potential to complete this course, a student should attend all class and laboratory meetings, take notes and participate in class, complete all homework assignments and examinations including final examinations.

**Student Learning Outcomes / Competencies:**

Upon completion of this course and receiving a passing grade, the student will have acquired introductory level knowledge of the following principles and applications:

1. Life Skills in Planning: Goals, Roles and Priorities.
2. Crop Production and Society.
3. Plant Morphology.
4. Soil and Land.
5. Plant Nutrition and Fertilizers.
6. Plant and Soil Water.
7. Pests in Crop Production.
8. Agricultural Production Systems.
9. Farm programs.
10. Commodity organizations.
11. Governmental agencies.
12. Philosophical concepts of world nutrition and population.
13. U.S. Agriculture compared to world Agriculture.

## ***COURSE OUTLINE:***

### ***SECTION 1: Course Introduction / Professor Introduction / Student Introductions***

- 1.1 Determine the background of students:
  - a. Origin (rural/farming/urban)
  - b. Family background (farming, white collar, blue collar, etc.)
  - c. Knowledge of basic science (completed basic science course?)
- 1.2 Determine “agricultural awareness” and perception of the field.
  - a. How important is the field?
  - b. How is it perceived in society (e.g., prestige, profitability, etc.)
- 1.3 Determine students’ goals
  - a. Just taking the course for the sake of it?
  - b. Taking the course to prepare for a career in agriculture?
- 1.4 “Goals Roles and Priorities.” An in-depth lecture and discussion regarding methodology from Dr. Stephen Covey and other business writers regarding how one should review and prioritize relationships along with career, personal planning and goals.

### ***SECTION 2: Crop Production and Society***

#### **Student Outcomes:**

- 2.1 Discuss the different views on the evolution of crop production.
- 2.2 Discuss the importance of crops to society as sources of food, feed, and fiber.
- 2.3 Discuss crop production as a science, an art, and a business.
- 2.4 Provide a list of important cereal, feed grains, oil, and fiber crops.
- 2.5 Discuss factors determining the dynamic structure of agriculture.
- 2.6 Trace a brief history of agriculture in the US.
- 2.7 Discuss the structure of US crop farms, including size, crop types, and sales.
- 2.8 Discuss the characteristics of the US farmer including age, education, and cropland use.
- 2.9 Describe the farming regions of the US.
- 2.10 Describe specific government programs available to producers.

### ***SECTION 3: Plant Morphology***

#### **Student Outcomes:**

- 3.1 Define the term plant taxonomy (relate to other kinds of taxonomy—animal, soil—and point out the common purpose).
- 3.2 Discuss the rules pertaining to plant taxonomy.
- 3.3 Classify plants on operational basis, including agronomic use, adaptation, growth form, stem type, and growth cycle. Point out the importance or utility of each.
- 3.4 List and give examples of important crop plant families. Discuss their local, national and global importance
- 3.5 Describe how plants are identified using morphological features of the leaf, stem, flower and seed in dicots and monocots.
- 3.6 List the major cellular organelles and describe their functions
- 3.7 List the different types of plant tissues. Discuss the structure and functions of simple and complex tissues. Identify specific roles they play in crop production in terms of kinds of products and how they impact product quality (e.g., delay in harvesting a crop makes increases fiber content and reduced succulence and quality)
- 3.8 Describe the structure and function of the leaf, stem, root, and flower. How are crop cultural practices designed to optimize these functions for increased productivity?

## **SECTION 4: SOIL AND LAND**

### ***Student Outcomes***

- 4.1 List and briefly describe the twelve soil orders (according to US NRCS) in relation to crop production.
- 4.2 Discuss the soils in the state and those used for agriculture where applicable.
- 4.3 Discuss the role soil physical characteristics (texture, structure, soil bulk density, porosity, permeability, and aggregation) play in crop production.
- 4.4 Define and discuss CEC and its importance.
- 4.5 Define and discuss soil pH and its importance.
- 4.6 Discuss the distribution of arable land in the world.
- 4.7 Describe and discuss soil organisms and their importance.

## **SECTION 5: PLANT NUTRIENTS AND FERTILIZERS**

### ***Student Outcomes***

- 5.1. List the essential nutrients for plant growth and development.
- 5.2. Discuss the role of essential nutrients in plant nutrition.
- 5.3. Describe how the soil losses nutrients.
- 5.4. Discuss the methods of diagnosing soil nutrient status.
- 5.5. Discuss the methods of providing supplemental nutrients to the soil for crop production.
- 5.6. Discuss nutritional utilization patterns of crop plants.
- 5.7 Discuss nutrient cycling.
- 5.8 Discuss the importance of climate in soil productivity.
- 5.9 Mathematically determine percentage of macronutrients in specified fertilizer weight.

## **SECTION 6: PLANT AND SOIL WATER**

### ***Student Outcomes***

- 6.1 Discuss the hydrological cycle.
- 6.2 Classify soil water according to availability to plants.
- 6.3 Discuss the role physical soil factors play in soil water availability.
- 6.4 Discuss how water moves in the soil.
- 6.5 List and discuss the primary goals of soil water management.
- 6.6 Discuss water use efficiency and factors that affect it.
- 6.7 Discuss water management in rain fed production in humid conditions.
- 6.8 Discuss the methods of irrigation and the role of water quality

## **SECTION 7: PESTS IN CROP PRODUCTION**

### **Student Outcomes**

- 7.1 List and describe the categories of organisms that cause diseases.
- 7.2 Discuss the factors that cause disease.
- 7.3 Describe the disease cycle.
- 7.4 Discuss the strategies and mechanisms plants adopt to resist disease.
- 7.5 Discuss the genetic basis of disease resistance.
- 7.6 Discuss how pathogens affect crop productivity.
- 7.7 Describe insect pests their classification, and economic importance.

- 7.8 Describe weeds their classification, and economic importance.
- 7.9 Discuss abiotic disease agents.
- 7.10 List and describe important crop pests.
- 7.11 Discuss the principles of pest management.
- 7.12 Describe how pest attack may be prevented.
- 7.13 List and discuss the methods of pest management.
- 7.14 Describe the steps in selecting and applying pesticides safely.
- 7.15 Discuss the impact of pesticides in the environment.

## **SECTION 8: MID-TERM PAPER**

### **Student Outcomes**

- 8.1 The student will determine the subject of a mid-term paper that fits within his or her specific interests in materials and data associated with Agronomy.
- 8.2 The student will be required to practice pro-active planning and calendar skills to meet submission deadline.
- 8.3 The student will present the paper to the class using power point or other presentation technology.

**DIVERSITY STATEMENT:** In this class, the teacher will establish and support an environment that values and nurtures individual and group differences and encourages engagement and interaction. Understanding and respecting multiple experiences and perspectives will serve to challenge and stimulate all of us to learn about others, about the larger world and about ourselves. By promoting diversity and intellectual exchange, we will not only mirror society as it is, but also model society as it should and can be.

**ADA Statement:** Students with disabilities, including but not limited to physical, psychiatric, or learning disabilities, who wish to request accommodations in this class should notify the Disability Services Office early in the semester so that the appropriate arrangements may be made. In accordance with federal law, a student requesting accommodations must provide acceptable documentation of his/her disability to the Disability Services Office. For more information, call or visit the Disability Services Office through the Guidance and Counseling Centers at Reese Center (Building 8) [716-4606](tel:716-4606), or Levelland (Student Services Building) [716-2577](tel:716-2577).

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