**AG 314 Emerging Technologies in Agriculture**

**INSTRUCTOR:** Nancy Gutierrez

 Office Hours: MWF 1:00-4:00

 Office: AG 5

 Phone: 559-494-3530

 Email: nancy.gutierrez@reedleycollege.edu

**DEPARTMENT :** Agriculture and Natural Resources

**DELIVERY:** In person; Tuesday, Wednesday, Thursday 3:00 pm-5:00 pm

**Course Welcome:**

Welcome to AG314 Emerging Technologies in Agriculture! This class is a new and exciting opportunity to interact with professionals in the Agriculture Technology Industry. AG314 will provide you with an overview of the various technologies being used in our local area. Much of the course is presented by industry professionals who are experts in their field. Each week we will address new topics, take tours and work in a variety of environments.

If you have any questions please contact me. My email address is nancy.gutierrez@reedleycollege.edu.

**Course Description:**

This course provides an overview of emerging technology in the agriculture industry, specifically in tree fruit, citrus, and vineyard production. Topics including automation in the field and packing facility, as well as biotechnology in agriculture and an overview of programmable logic controllers PLCs. ADVISORIES: English 1A or 1AH.

**TEXT:** None Required; Supplemental resources will be provided.

**Student Learning Outcomes:**

AG-314 SLO1: List four types of emerging technology being used in the agriculture industry for field production
AG-314 SLO2: List four types of emerging technology being used in the agriculture industry for a packing facility
AG-314 SLO3: Develop a maintenance plan for machinery/new technology in a packing facility

**POINTS:** Your grade in this course is determined by points (it is not weighted). This course uses the traditional grading scale shown below.

100-90% A
89-80% B
79-70% C
69-60% D
59-0% F

**FINAL EXAM INFORMATION:** Final examination will be assessed through individual interviews.

**Academic Honesty**

You are expected to abide by ethical standards in preparing and presenting material that demonstrates your level of knowledge. Such standards are founded on basic concepts of integrity and honesty. Plagiarism and cheating will not be tolerated. Such behavior will result in a zero on the assignment/quiz and will be reported to the Dean of Student Services.

**Accommodations**

If you have a verified need for academic accommodation or materials in alternate media (i.e. Braille, large print, electronic text, etc.) per the Americans with Disabilities Act (ADA) or Section 504 of the Rehabilitation Act, please contact me as soon as possible. In addition, please remember that it is the responsibility of the student to provide an accommodation form to the instructor at the beginning of the course.

## Course Outline

1. Why we implement advanced technology into agriculture production

a. Labor

b. Production efficiencies

c. Financial

2. Technology in the Packing Facility

a. Pre-sorters, bagging machine

b. Clamshell Auto-packers

c. Tray Pack auto-packers

d. Volume Fillers

e. Optic Graders

f. Box recognition programs for traceability

g. Maintenance –

i. Regular review of belts motors, etc. and diagnosis and repair

ii. Calibration of equipment, output quality and overall efficiency measurement

h. Palletizing machine

3. Technology in the Field

a. Platforms

b. Burros

c. Auto steering tractors – GPS

d. GIS - Interpreting vegetation, soil, water

e. Drones – case study on limitations and uses

4. Biotechnology

a. Real Time Data

b. Bio-stimulants/Bio-fertilizers

c. Sugar Brix Levels

d. Beneficial Bacteria/fungus

e. Variety Development and genetics

f. Non-chemical waxes & pre/post-harvest sprays

g. Regenerative Agriculture (Soil Health)

h. Organics

i. Cover crops/Soil ecosystems/compost

5. Programmable Logic Controllers (PLC)

a. Maintenance -

b. Power Supply

c. Sophisticated Sizer-line Operators

d. Process of programming

e. Starters and Auxiliary contractors

f. Motor Start/stop

g. VFD control

h. Data Types