South Central College

MEAG 1001 Mechatronics Applications in Agriculture

Common Course Outline

Course Information

Description This class is designed to introduce students to agricultural practices that have used automation technology to reduce input costs, decrease manual labor, improve safety, and/or increase efficiency and accuracy. Students will get a historic perspective of technological advances in agriculture, a sense of the current reality of mechatronics use in agribusiness, and evaluate areas ripe for automation upgrades. (Prerequisite: None).

Total Credits 3

Total Hours 48

Types of Instruction

Instruction Type	Credits/Hours
Lecture	3/48

Course Competencies

1. **Define Mechatronics as it relates to the agricultural industry.**

   Learning Objectives
   List the purposes and uses of automation.
   Create and overview of basic mechatronic systems and components and their uses.

2. **Define Agriculture as it relates to the mechatronics industry.**

   Learning Objectives
   List the common mechatronics systems historically prevalent in agriculture.
   Understand AFNR, the systems pathway, and the chain of production (field to fork) as it relates to ag careers.

3. **Analyze the role of mechatronics in agricultural manufacturing.**

   Learning Objectives
   Identify current mechatronics applications used by agricultural machinery and input manufacturers.
   Describe some of the mechatronic systems and components used by agricultural manufacturing.

4. **Analyze the role of mechatronics in agribusinesses providing producers with agricultural inputs.**

   Learning Objectives
   Identify current mechatronics applications used by agribusinesses selling, distributing, and transporting inputs.
   Describe some of the mechatronic systems and components used by agricultural manufacturing.

5. **Analyze the role of mechatronics in agronomy production.**

   Learning Objectives

Identify current mechatronics applications used in agronomy production.
Explore the historic practices that those applications improved upon.

6. Analyze the role of mechatronics in livestock production.

Learning Objectives

Identify current mechatronics applications used in livestock production.
Explore the historic practices that those applications improved upon.

7. Analyze the role of mechatronics in food processing.

Learning Objectives

Identify current mechatronics applications used in food processing.
Describe some of challenges this workplace setting adds to mechatronic innovation as it relates to food safety.

8. Determine agricultural practices that have room for automation technology to reduce input costs, decrease manual labor, improve safety, and/or increase efficiency and accuracy.

Learning Objectives

Identify a current deficiency that can be solved by mechatronics.
Propose and defend a suggested technical solution.

9. Explore career opportunities where Mechatronics and Agriculture intersect.

Learning Objectives

Ascertain the type of installation, maintenance, troubleshooting, repair, reconfiguring, and/or replacement that may be needed for the mechatronic systems and components used in agricultural settings.
Identify current businesses in this sector.