J.S. University, Shikohabad

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VALUE ADDED COURSE

Precision Agriculture: Applications in Crop Management

Faculty of Agricultural Sciences

	J.S. University, Shikohabad Faculty of Agricultural Sciences	Value Added Course
		AGVAC-07

Precision Agriculture: Applications in Crop Management

Course Overview: This course aims to provide learners with an understanding of precision agriculture and its applications in crop management. Through lectures, case studies, and hands-on activities, learners will develop skills in using precision agriculture technologies, such as GIS, remote sensing, and sensors, to optimize crop productivity and resource use efficiency.

Course Outcomes: Upon completion of this course, learners will be able to:

1. Understand the principles and concepts of precision agriculture and its applications in crop management.
2. Analyze and interpret spatial and temporal data using GIS and remote sensing technologies to improve crop productivity.
3. Design and evaluate precision agriculture systems, including sensor-based technologies, for crop management.
4. Apply knowledge of precision agriculture to improve crop production, resource use efficiency, and profitability.
5. Understand the economic and policy factors that influence the adoption of precision agriculture, and apply this knowledge to develop sustainable precision agriculture plans.

Course Outline:

Module 1: Introduction to Precision Agriculture

- Basic concepts and principles of precision agriculture
- Applications of precision agriculture in crop management
- Overview of precision agriculture technologies, including GIS, remote sensing, and sensors

Module 2: Spatial and Temporal Data Analysis in Precision Agriculture

- GIS and remote sensing technologies for crop management

- Data collection, processing, and analysis techniques
- Case studies of successful precision agriculture applications in different crops and landscapes

Module 3: Precision Agriculture Systems

- Sensor-based technologies for crop management, including soil moisture sensors, plant sensors, and weather stations
- Performance evaluation and optimization of precision agriculture systems
- Case studies of successful precision agriculture systems in different crops and landscapes

Module 4: Resource Use Efficiency in Precision Agriculture

- Optimization of crop productivity and resource use efficiency using precision agriculture technologies
- Water and nutrient management in precision agriculture
- Case studies of successful precision agriculture applications in resource-limited environments

Module 5: Economic and Policy Aspects of Precision Agriculture

- Economic and policy factors influencing the adoption of precision agriculture
- Financing and investment options for precision agriculture systems
- Sustainable precision agriculture planning and implementation

Assessment:

- Quizzes and assignments will be given at the end of each module to test learners' understanding of the concepts covered.
- A final project will require learners to design a precision agriculture system for a specific crop and landscape.

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Course Duration: This course is designed to be completed in 8 weeks, with approximately 4 hours of study per week.

Book References:

1. Precision Farming: Soil Fertility and Productivity Aspects by Suresh Chandra and Vikram S. Dhillon
2. Precision Agriculture: Basics to Advanced Concepts by S. K. Upadhyaya, R. K. Singh, and Raj Kumar
3. Principles of Precision Agriculture by John V. Stafford and Robert D. Hauser
4. Remote Sensing and GIS Applications in Agriculture by M. P. Gupta and Shweta Singh

1. Precision Agriculture for Sustainability by José L. Torres and Ian R. Johnson

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