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**AGSC 132**  
**An Introduction to Computer Applications**  
**in Precision Farming**  
**Fall 2023**

**Second Examination Study Guide**

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- What does GIS stand for and how it can be defined?
- What can GIS do?
- What are the primary benefits of GIS?
- List many of the GIS-related fields and how these relate to GIS.
- What is the difference between a map and GIS?
- What are some of the drawbacks of paper maps?
- What are some of the capabilities of GIS?
- What are the sources of data for GIS?
- How is GIS being currently used?
- Know the difference between raster and vector data.
- Understand the three types of vector data and when each is used.
- Have a basic understanding of the components of Farm Works and QGIS (and other GIS-related software covered in class so far).
- Know how to convert the units of measurements based on provided conversion factor(s).
- Understand the meaning of map scale and the three ways to depict it on a map.
- Know how to use a map scale to find distances on the ground given measurements on the map or vice versa.
- Understand what is unique about topographic maps and how to interpret them.
- Know what contour lines correspond to and how these provide information about topography.
- Understand how to read contour lines.
- Define yield monitoring and how it is measured.
- Know the three approaches to measuring yield.
- Know the kind of sensors needed in yield monitoring on site-specific basis?
- Understand how yield mapping relates to yield monitoring and data collection?
- Understand why are soil sampling (especially site-specific) and testing needed?
- Know the soil sampling-related factors that influence yield.
- Understand why is soil fertility important and why should it be monitored?
- Know why would a farmer need to monitor soil pH?
- What are some of the additional factors that influence crop yield (aside from nutrients, fertility, and pH)?
- What are the three soil sampling methods that are usually followed in precision agriculture?
- What are some of the factors that one should consider in a soil sampling program?
- Define variable rate application.
- Understand why is variable rate application used and when should it become an integral part of a precision farming system?
- What are the two methods for implementing variable rate application?
- What are the benefits and drawbacks of map-based variable rate application systems?
- What are the primary components of map-based variable rate application systems?
- What are variable rate controllers and actuators used for?
- What are some of the issues that one should consider in variable rate application systems?