MASTER COURSE OUTLINE

A. AGSC2010 Introduction to Precision Agriculture, GPS and GIS

B. COURSE DESCRIPTION:

Students are introduced to basic concepts, theories, operations, tools, and applications of precision agriculture, Geographic Information Systems (GIS) and Global Positioning Systems (GPS). The precision agriculture component of this course studies how the productivity of a field is optimized by agronomic inputs based on real-time data variability found within a field. Operating principles of electronic equipment used in precision agriculture along with basic diagnosis of common equipment malfunctions are introduced. GIS concepts, map projections and coordinate systems, basic data models, data sources and types, operations and processing, and GIS analysis and spatial modeling are introduced. Principles of GPS and how these systems operate to improve accuracy are included in the course.
(4 Cr – 3 lect, 1 lab)

C. **Core Theme: Critical Thinking

D. MAJOR CONTENT AREAS:

- Crop management using precision agriculture
- Soil geography
- Land use
- Precision mapping
- Emerging agri-data technologies
- GIS applications and problem solving
- GPS applications and problem solving
- Satellite tracking
- Remote sensing and image analysis
- Crop scouting techniques
- Electronics components and troubleshooting

E. GOAL TYPES, OBJECTIVES, AND OUTCOMES:

GOAL TYPE	OBJECTIVES Students will be able to	OUTCOMES The student will successfully
**Critical Thinking	gather factual information and apply it to a given problem in a manner that is relevant, clear, comprehensive and conscious of possible bias in the information selected.	1. investigate and complete an analysis of a current issue related to precision agriculture, GIS and GPS. 2. summarize and explain the context of the findings and the sources of possible bias in the analysis above.
CS	recognize basic skills and tools necessary for effective crop management.	1. define, explain and use appropriate terms relevant to effective crop management.
CS	demonstrate an understanding of soil geography and land use applying precision agriculture techniques.	1. identify and explain the elements of precision agriculture relevant to soil geography and land use.
CS	demonstrate an understanding of precision mapping.	1. identify and explain the elements of precision mapping.
CS	demonstrate an understanding of the emerging agri-data technologies and their applications.	1. identify and explain emerging agri-data technologies and the importance of data management.
CS	demonstrate an understanding of Geographic Information Systems and applications	1. identify and explain how data is used in GIS computer information systems.
CS	demonstrate an understanding of Global Positioning Systems and applications	1. plan, collect and process GPS data both in the classroom setting and in the field.
CS	demonstrate an understanding of satellite tracking.	1. identify and explain how satellite tracking is applied in agriculture.
CS	demonstrate an understanding of remote sensing and image analysis.	1. identify and explain how remote sensing and image analysis are used in agriculture.
CS	demonstrate an understanding of crop scouting techniques.	1. identify and explain how crop scouting techniques are applied in agriculture.
CS	demonstrate an understanding of electronics components and troubleshooting.	1. identify and explain how electronic components and troubleshooting are used to maintain agriculture machinery systems.

F. SPECIAL INFORMATION:

This course may require use of the Internet, the submission of electronically prepared documents and the use of a course management software program. Students who have a disability and need accommodations should contact the instructor or the Student Success Center at the beginning of the semester. This information will be made available in alternative format, such as Braille, large print, or current media, upon request.

G. COURSE CODING INFORMATION: Course Code C/Class Maximum 48; Letter Grade

Revision date: 11//24/14; 11/1/17 ; 01/12/2021
AASC Approval date: 11/21/17 ; 02/16/2021

***Riverland Community College Disciplines**	**MnTC Goal Number**
Communication (CM)	**1**
Natural Sciences (NS)	**3**
Mathematics/Logical Reasoning (MA)	**4**
History and the Social & Behavioral Sciences (SS)	**5**
Humanities and Fine Arts (HU)	**6**

****Riverland Community College Core Themes**	**MnTC Goal Number**
Critical Thinking (CT)	**2**
Human Diversity (HD)	**7**
Global Perspective (GP)	**8**
Ethical and Civic Responsibility (EC)	**9**
People and the Environment (PE)	**10**

*These five MnTC Goals have been identified as Riverland Community College Disciplines.
** These five MnTC Goals have been identified as Riverland Community College Core Themes.
NOTE: The Minnesota Transfer Curriculum "10 Goal Areas of Emphasis" are reflected in the five required discipline areas and five core themes noted in the Riverland Community College program of study guide and/or college catalog.