MASTER COURSE OUTLINE

A. AGSC1020 Introduction to Soil Science

B. COURSE DESCRIPTION:

This course investigates the formation, classification, and composition of soils, with emphasis on environmental quality, chemical and physical properties affecting growth and nutrition of plants. Management principles and practices are used to increase productivity and conserve soil and water resources for agronomic crops.
(3 Cr – 2 lect 1 lab)

C. **Core Theme: Critical Thinking

D. MAJOR CONTENT AREAS:

- Introduction to soils
- Formation of soils
  - Soil genesis
  - Clorpt
  - The soil profile
- Classification and survey of soils
  - Solids, pores, aggregates and minerals
  - Soil survey
- Physical properties of soils
  - Texture
  - Density and permeability
  - Structure
  - Tilth
  - Pans
  - Temperature
  - Color
- Soil chemistry
  - Liquids and gases
  - Water
  - Acidity and salinity
- Managing soil water
  - Water management concepts
  - Extraction and infiltration
  - Irrigation
  - Drainage
  - Water use efficiency

- Soil Organisms
    - Micro organisms
    - Macro organisms
    - Microbial processes
- Macronutrients and micronutrients and their relationship to plant growth
    - Nutrient cycles
    - Movement of nutrients
    - Release and uptake of nutrients
    - Fertilizers
- Soil Degradation
    - Weathering
    - Water and wind erosion
    - Physical and chemical degradation
    - Degradation control
- Soil use and soil management
    - Sustainable agriculture

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 soils. 2. summarize and explain the context of the findings and the sources of possible bias in the analysis above.
CS	apply vocabulary of soils and soil management.	1. define, explain and be able to use appropriate terms related to soils and soil management.
CS	demonstrate an understanding of soil chemistry and properties.	1. identify the components of soil chemistry and the physical properties of soil.
CS	understand the role of organic matter and its relationship to soil fertility.	1. articulate the organic material of soils and their effect on soil fertility.
CS	recognize the macronutrients and micronutrients of soils.	1. demonstrate an understanding of soil nutrients affecting plant growth and crop production.
CS	explain erosion of soils and the environmental effects of erosion.	1. investigate wind and water erosion of specific farm systems.
CS	recognize and evaluate potential ethical, legal and social issues related to a soil management.	1. make and defend conclusions based on various soil management criteria.

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: 10/10/17
AASC Approval date: 11/21/17

***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.