Faculty members are required to have the outline submitted to the Academic Affairs Office. The course outline is the form used for approval of new courses by the Academic Affairs and Standards Council.

**DEPT. AGRI COURSE NUMBER: 2203**

<table>
<thead>
<tr>
<th>NUMBER OF CREDITS: 3</th>
<th>Lecture: 2</th>
<th>Lab: 1</th>
<th>OJT 0</th>
</tr>
</thead>
</table>

**Course Title:** Soil Fertility and Fertilizer

**Catalog Description:**
Explores the chemical elements in the soil and plants. Soil testing, tissue testing, fertilizer nutrients, fertilizer products, and fertility recommendations are studied.

**Prerequisites or Necessary Entry Skills/Knowledge:**
None

**FULFILLS MN TRANSFER CURRICULUM AREA(S)**
Goal 1: Communication: ____ by meeting the following competencies:

Goal 2: Critical Thinking: ____ by meeting the following competencies:

Goal 3: Natural Sciences: ____ by meeting the following competencies:

Goal 4: Mathematics/Logical Reasoning: ____ by meeting the following competencies:

Goal 5: History and the Social and Behavioral Sciences: ____ by meeting the following competencies:

Goal 6: The Humanities and Fine Arts: ____ by meeting the following competencies:

Goal 7: Human Diversity: ____ by meeting the following competencies:

Goal 8: Global Perspective: ____ by meeting the following competencies:

Goal 9: Ethical and Civic Responsibility: ____ by meeting the following competencies:

Goal 10: People and the Environment: ____ by meeting the following competencies:
**Topics to be Covered**

- Characteristics of Soil
- Plant Nutrients
- Characteristics of Clay
- Macro Nutrients – Nitrogen, Phosphorus, & Potassium
- Secondary Nutrients – Sulfur, Calcium, Magnesium
- Micro Nutrients
- Soil pH and Salinity
- Soil Organisms
- Organic Matter
- Soil & Plant Tissue Testing
- Reading a Soil Test
- Fertility and Lime Recommendations
- Fertilizer Products
- Manure as Fertilizer
- Site Specific Applications

**Student Learning Outcomes**

- Describe soil origin and physical properties of soil.
- Classify essential elements required by plants.
- Describe how plants absorb nutrients.
- Describe the interaction of plant nutrients and soil.
- Differentiate the effects of fertilizer elements on plant growth and development.
- Identify nutrient deficiencies
- Analyze a soil test report.
- Calculate fertilizer and lime recommendations with costs.
- Describe major fertilizer products and their analysis.
- Describe the effects of pH on nutrient interaction and plant uptake.
- Explain the benefits of organic amendments and manure for soil fertility and plant nutrition.
- Collect soil samples on a grid

**Is this course part of a transfer pathway:** Yes ☐ No ☒

Revised Date: 7-15-2020