COMMON COURSE OUTLINE: Course discipline/number/title: HORT 1310: Soil Science

A. CATALOG DESCRIPTION
1. Credits: 3
2. Hours/Week: 2 hours lecture per week, 2 hours lab per week
3. Prerequisites (Course discipline/number): None
4. Co-requisites (Course discipline/number): None
5. MnTC Goals (if any): NA

To gain an understanding of the physical and chemical properties of soil. To recognize differences in soil quality as it affects plant growth. To modify a soil by using soil amendments. An understanding of soil principles is critical to the cultural management of any horticultural crop. Soil is important as a plant growth medium which acts as a reservoir of fertility and physical support of plant roots. This course covers topics in the basic study of soils including physical, chemical, and biological properties of soils, soils formation, soil classification, soil pH and soil surveys. Soil amendments as used in horticultural crop soils will also be discussed. RECOMMENDED ENTRY SKILLS/KNOWLEDGE: High School diploma or GED.

B. DATE LAST REVISED (Month, year): November, 2006

C. OUTLINE OF MAJOR CONTENT AREAS:
An understanding of soil principles is critical to the cultural management of any horticultural crop. Soil is important as a plant growth medium which acts as a reservoir of fertility and physical support of plant roots. This course covers topics in the basic study of soils including physical, chemical, and biological properties of soils, soils formation, soil classification, soil pH, and soil surveys. Soil amendments as used in horticultural crop soils will also be discussed.

D. LEARNING OUTCOMES (GENERAL): The student will be able to:
1. Describe soil inorganic composition components.
2. Describe organic matter component composition.
3. Analyze soil texture-structure.
4. Describe soil color-temperature characteristics.
5. Examine soil color characteristics.
6. Describe soil profiles.
7. Analyze soil profiles.
8. Examine soil profiles.
10. Compare land capability classes.
11. Describe hydrologic cycle.
12. Describe soil water movement.
13. Describe soil water forces.
14. Describe soil drainage concepts.
15. Calculate soil percolation rate.
16. Describe soil water holding capacity.
17. Measure soil water.
18. Compare water conservation techniques.
19. Describe erosion concepts.
20. Compare erosion control practices.
21. Describe soil tillage effects.
22. Describe soil density concepts.
23. Analyze soil bulk density.
24. Describe soil biological activity.
25. Describe plant soil-water relationships.
26. Describe nutrient cycling.
27. Describe plant nutrient uptake.
29. Describe soil pH concepts.
30. Describe cation exchange capacity.
31. Perform soil sampling.
D. LEARNING OUTCOMES (GENERAL): Continued...
The student will be able to:
32. Analyze soil pH measurements.
33. Compare plant-soil pH relationships.
34. Analyze soil pH-liming relationships.
35. Prepare soil pH adjustment recommendations.
36. Identify horticulture soil amendments.
37. Use horticulture soil amendments.

E. LEARNING OUTCOMES (MNTC): NA

F. METHODS FOR EVALUATION OF STUDENT LEARNING:
1. Tests
2. Quizzes
3. Lab work
4. Miscellaneous assignments
5. Class participation

G. SPECIAL INFORMATION (if any): None