

**College of Science and Health  
Department of Environmental Science  
Course Outline**

1. TITLE OF COURSE AND COURSE NUMBER: Soil in the Environment  
ENV 375, 3 credits
2. DESCRIPTION OF THE COURSE: This course acquaints the student with the fundamentals of soil science. It teaches that soil is a natural resource which must be managed and conserved. Topics studied include the physical and chemical properties of soil, soil water, soil genesis and classification, soil microbiology, soil conservation and management. Particular attention is given to the soils of New Jersey.
3. COURSE PREREQUISITES: ENV 115 or permission of instructor.
4. COURSE OBJECTIVES: To make the student aware of soil as part of the environment and to provide a body of knowledge from which the student can make decisions regarding land use for buildings, agriculture, waste disposal, or soil management.
5. STUDENT LEARNING OUTCOMES:  
Upon completion of this course, students should be able to:
  1. Effectively express themselves in written and oral form
  2. Demonstrate the ability to think critically
  3. Locate and use information
  4. Demonstrate the ability to integrate knowledge and ideas in a coherent and meaningful manner
  5. Work effectively with others
  6. Identify the major classes of soils and explain their defining characteristics
  7. List the factors which control soil formation and explain how they interact during the process of soil formation
  8. Analyze the importance of water in soil systems
  9. Explain the effect of humans on the Earth's soils
6. TOPICAL OUTLINE OF THE COURSE CONTENT:
  - I. Introduction
  - II. Rocks, rock weathering, and the formation of soil parent materials
  - III. Soil formation
  - IV. Physical properties of soils
  - V. Organisms and organic matter in soils
  - VI. The mineral fraction of soils
  - VII. Ion exchange in soils
  - VIII. Water relationships in soils
  - IX. Soil classification and survey



- X. Soil water management
- XI. Principles and control of soil erosion
- XII. Soil productivity and fertility
- XIII. Soil nutrients
- XIV. Soils and the quality of the environment

7. GUIDELINES/SUGGESTIONS FOR TEACHING METHODS AND STUDENT LEARNING ACTIVITIES:

Lectures, class discussions, one mandatory field trip

8. GUIDELINES/SUGGESTIONS FOR METHODS OF STUDENT ASSESSMENT (STUDENT LEARNING OUTCOMES):

Three examinations

9. SUGGESTED READINGS, TEXTS, OBJECTS OF STUDY:

Brady, N.C., and Weil, R.R., 2004, Elements of the Nature and Properties of Soils, 2<sup>nd</sup> ed., Pearson/Prentice Hall, 606 pp.

Miller R.W., and Gardiner, D.T., 2001, Soils in Our Environment, 6<sup>th</sup> ed., Pearson/Prentice Hall, 642 pp.

10. BIBLIOGRAPHY OF SUPPORTIVE TEXTS AND OTHER MATERIALS:

"The Nature and Properties of Soils", Brady, N.C.; Macmillan Publishing Co., Inc., 1990

"Fundamentals of Soil Science", Foth, H.D.; John Wiley and Sons, 1978

"Learning Manual and Lectures Outlines for Soil Science 051", Foth, H.D., Cooper, T.H., and Rieke, P.E.; Crop and Soil Sciences Department Michigan State University, 1975

"Clay Mineralogy", Grim, R.E.; McGraw-Hill Book Co., 1968

"Soil and Water", Hillel, D.; Academic Press, 1971

"Soil Conservation", Kohnke, H., and Bertrand, A.R.; McGraw-Hill Book Company, 1959

"Laboratory Manual for Introductory Soils", Sabey, B.; Stipes Publishing Company, Champaign, Illinois, 1967

"The Soils of New Jersey", Tedrow, J., Rutgers University Press, New Brunswick, 1985.

11. PREPARER'S NAME AND DATE: Karen Swanson, Fall 2007

12. ORIGINAL DEPARTMENTAL APPROVAL DATE:

13. REVISER'S NAME AND DATE:

14. DEPARTMENTAL REVISION APPROVAL DATE: