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| **Soil Protection** |

**Code: MFTAV31K03-EN**

**ECTS Credit Points: 3**

Year, Semester: any year/2nd semester

Number of teaching hours/week:

Lecture: **2**

Practice: **2**

**Prerequisites:** none

**Topics**:

The primary objective of this course is how we can use soil as natural resource without endangering its sustainability. The students get knowledge about the ecological functions of soil and its role in recycling resources needed for plant growth. It will be presented how soil science theory can tried to the practice of those that use soil. Finally they will understand the importance of the sustainable management of soil and water resources by devoting detail to such subjects as soil and water conservation, conservation tillage, nutrient, and sustainable agriculture.

**Literature:**

Edward J. Plaster: Soil Science and Management (5th Edition). ISBN-13: 978-0-538-75803-1, Delmar, Cengage Learning, 2009.

**Schedule**

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| **1st week:**  **Lecture:** The importance of soil. Soil as the life-supporting layer of material. Soil is medium for plant growth. A three-phase system.  **Practice:**  **2nd week:**  **Lecture:** Agricultural uses of soil. Nonagricultural usage of soil.  **Practice:**  **3rd week:**  **Lecture:** Soil profile, master horizons, subdivisions of the master horizons. Soil classification, taxonomy.  **Practice:**  **4th week:**  **Lecture:** Physical properties of soil. Effect of a particle size, soil separates. Textural classification. Soil porosity and permeability.  **Practice:**  **5th week:**  **Lecture:** Life in soil. The soil food chain and the carbon cycle. Distribution and functions of microorganisms in soil.  **Practice:** | **6th week:**  **Lecture:** Organic matter. Chemical makeup of detritus, the process of decay. Factors affecting organic matter. Functions of organic matter.  **Practice:**  **7th week:**  **Lecture:** Soil water. How plants use water. Types of soil water, water retention and movement. How roots gather water.  **Practice:**  **8th week:**  **Lecture:** Drainage andirrigation.The importance of drainage. Kinds of wetland and wet soil. Artificial drainage (surface and subsurface drainage, drainage management).  **Practice:**  **9th week:**  **Lecture:** Irrigation systems (subsurface, surface, sprinkler, and micro irrigation). Using irrigation.  **Practice:**  **10th week:**  **Lecture:** Soil fertility. Plant nutrients. Nutrient uptake, factors affecting uptake.  **Practice:** |
| **11th week:**  **Lecture:** Plant nutrition. Forms of nitrogen in the soil, nitrogen deficiency. Forms of phosphorus, movement and uptake.  **Practice:**  **12th week:**  **Lecture:** Forms of potassium in soil, their movements, deficiencies. Secondary nutrients, trace elements, beneficial elements.  **Practice:** | **13th week:**  **Lecture:** Forms of fertilizer, fertilizer materials. Applying fertilizer. Fertilizer effects of soils.  **Practice:**  **14th week:**  **Lecture:** Organic amendments. Animal manure. Benefits and problems of manure. Biosolid problems, compost.  **Practice:**  **15th week:**  Visiting the experimental site of the University of Debrecen. |

**Requirements**

**A, for a signature:**

Attendance at **lectures** is recommended, but not compulsory.

Students must take part in the visit to the experimental site of the University of Debrecen.

**B, for a grade:**

The course ends in an **oral examination**.