**II.2.18 SOIL POLLUTION**

**A. Course description**

**1. Credit points: 2 ECTS**

**2. Time commitment**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Items | Lecture | Tutorial/Exercise | Practice/Assignment | Lab-work | Total |
| No. of hours | 10 | 0 | 10 |  | 20 |

**3. Prerequisites**: None

**4. Recommended background knowledge**: Inorganic and organic chemistry

**5. Subject description**

Polluted, degraded soils which costs us billions every year to address, is a major human health and environmental risk. The course explains the key issues such as soil processes in relation to pollution, contaminant hazards, contaminant fate and behavior, policy and regulation, sampling and analysis, risk assessment, and remediation options. Through this understanding the students will be able to orient themselves in the framework of general land and marine pollution while focusing on soil issues.

**6. Objectives & Outcome**:

Students will learn about soil degradation through pollution in a variety of landscapes and industries, and examine options for rehabilitation and clean-up.

**7. Assessment/ Evaluation**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Component | Attendance | Exercises | Assignments | Practicals | Midterm | Final |
| Percentage % | 10 | 10 | 0 | 10 | 30 | 40 |

**8. Prescribed Textbook(s)**

 *[1]* Course Instructor’s Lecture Notes

 *[2]* Ibrahim Mirsal. 2008. Soil Pollution: Origin, Monitoring and Remediation, 2nd ed., 312 p., ISBN 978-3-540-70775-2)

**B. Course content**

Soil processes and chemistry

Contaminant hazards and impact on soil biota

Contaminant fate and behaviour

Speciation, transport and uptake

Policy and regulation. Soil standards and quality evaluation

Sampling and analysis in soil-water system

Risk assessment: analysis of exposure pathways and actual risks for humans and ecosystems

Remediation techniques and their applicability

**C. Reference Literature**

Stegmann, R., Brunner, G., Calmano, W., Manz, G. (eds.) Treatment of Contaminated Soil: Fundamentals, Analysis, Applications. 2010, Springer, ISBN-13: 9783642075100.