

## Complex Environmental Engineer Planning I.

Code: MK5KKP2K03KX17-EN

ECTS Credit Points: 3

Evaluation: mid-semester grade

Year, Semester: 2<sup>nd</sup> year/1<sup>st</sup> semester

Number of teaching hours/week (lecture + practice): 0+3

### Topics:

Within the framework of this course students study and practice about the resolution of complex environmental and environmental engineering tasks

### Literature:

*Recommended:*

- Christie G. Geonkopéis: Transport Processes and Separation Processes Principles (Includes Unit Operations) Forth Edition, 2008. ISBN 0-13-101367-X
- H. Scott Fogler: Elements of Chemical Reacton Engineering. Fourth Edition, 2006. Personal Education International. ISBN 0-13-127839-8
- Waren L.McCabe, Julian C Smith, Peter Harriott: Unit Operations of Chemical Engineering. Seventh Edition, McGraw Hill Higher Edition. 2005. ISBN 007-12-4710-6
- H. F. Hemond, E. J. Fechner-Levy: Chemical Fate and Transport in Environment. Second Edition, 2000. AP. ISBN-13: 978-0-12-340275-2.
- Bruce E. Logan: Environmental Transport Processes. JohnWiley and Son Inc. 1999. ISBN: 0-471-18871-9.
- Ekkehard Holzbecher: Environmental Modeling Using MATLAB, Springer, 2007. ISBN978-3-540-72936-5
- Ruth E Weiner, Robin A. Matthews: Environmental Engineering (Fourth Edition), Elsevier, 2003
- Shroder, John F and Sivanpillai, Ramesh: Biological and Environmental Hazards, Risks, and Disasters, Elsevier, 2015

### Schedule

<b>1<sup>st</sup> week Registration week</b>	
<b>2<sup>nd</sup> week:</b> <b>Practice:</b> Field of complex environmental engineering planning. Environmental Systems Analysis Methods. Measurements in Environmental Engineering.	<b>3<sup>rd</sup> week:</b> <b>Practice:</b> Fundamentals of environmental technique, environmental technology and economics. Climate Modeling. Climate Change Impact Analysis for the Environmental Engineer. Adaptation Design to Sea Level Rise.
<b>4<sup>th</sup> week:</b> <b>Practice:</b> Soil Physical Properties and Processes. Environmental remediation. Soil Laboratory Practice in the Lab.218.	<b>5<sup>th</sup> week:</b> <b>Practice:</b> Natural or "Conventional" Water Quality Problems. Removal of pollutions and contaminants from environmental media.
<b>6<sup>th</sup> week:</b> <b>Practice:</b> Wastewater Engineering. Wastewater Recycling. Remediation technologies: ex-situ and in-situ methods.	<b>7<sup>th</sup> week:</b> <b>Practice:</b> 1 <sup>st</sup> Test
<b>8<sup>th</sup> week: 1<sup>st</sup> drawing week</b>	
<b>9<sup>th</sup> week:</b>	<b>10<sup>th</sup> week:</b>

**Practice:** Complex tasks and presentations.

**11<sup>th</sup> week:**

**Practice:** Complex tasks and presentations.

**13<sup>th</sup> week:**

**Practice:** Complex tasks and posters.

**15<sup>th</sup> week: 2<sup>nd</sup> drawing week**

**Practice:** Air Pollution Control Engineering. Ex-situ methods of remediation of soils. Extraction of contaminated groundwater and treatment at the surface.

**12<sup>th</sup> week:**

**Practice:** Waste Minimization and Reuse Technologies. Waste Reduction in Metals Manufacturing. In-situ methods of remediation of soils and groundwater. Remediation of oil-contaminated soil or sediments.

**14<sup>th</sup> week:**

**Practice:** 2<sup>nd</sup> Test

## Requirements

### A, for a signature:

Attending practices is compulsory. Students have to attend the practice classes and may not miss more than three times during the semester. In case a student does so, the subject will not be signed and the student must repeat the course. Students cannot make up any practice with another group. Attendance at practice classes will be recorded by the practice leader. Being late is equivalent with an absence. In case of further absences, a medical certificate needs to be presented. Missed practice classes should be made up for at a later date being discussed with the tutor. Students are required to bring the drawing tasks and drawing instruments of the course to each practice class. Active participation is evaluated by the teacher in every class. If a student's behaviour or conduct does not meet the requirements of active participation, the teacher may evaluate his/her participation as an absence because of the lack of active participation in class.

Students have to submit one **homework assignment** as scheduled minimum at a sufficient level.

During the semester there are two **tests**: the 1<sup>st</sup> test in the 7<sup>th</sup> week and the 2<sup>nd</sup> test in the 14<sup>th</sup> week. Students have to sit for the tests and earn at least 51% of the maximum points.

### B, for a grade:

The grade is determined on the basis of the test points. The minimum requirement is 51% of the total points. Based on the score of the tests, the grade for the course is given according to the following (score/grade): 0-50 = fail (1); 51-62 = pass (2); 63-75 = satisfactory (3); 76-88 = good (4); 89-100 = excellent (5).

If the score of the test is below 50, students can retake that test in conformity with the EDUCATION AND EXAMINATION RULES AND REGULATIONS.