MODULE: Sanitary engineering - Practical class

Last Update: 23.5.2012

1	Modulname Module name	Sanitary Engineering – Practical Class
2	Modulkürzel Identification code	021230501
3	Leistungspunkte (LP) Credit points (CP)	6
4	Semesterwochenstunden (SWS)/Semester load	2
5	Moduldauer (Anzahl der Semester) Module duration (Number of semesters)	1 Semester
6	Turnus Cycle	Every 2nd semester, winter semester
7	Sprache Language	English
8	Modulverantwortliche(r) Person in charge of module	Dr. rer.nat. Bertram Kuch Institut für Siedlungswasserbau, Wassergüte- und Abfallwirtschaft, Lehrstuhl für Hydrochemie und Hydrobiologie in der Siedlungswasserwirtschaft Tel. 0711 / 685-65443 E-mail: bertram.kuch@iswa.uni-stuttgart.de
9	Dozenten Lecturers	Dipl.-Geol. Detlef Clauß Dr.-Ing. Daniel Dobslaw Dipl.-Ing. Ralf Minke Dipl.-Ing. Matthias Rapf
10	Verwendbarkeit/Zuordnung zum Curriculum /Applicability/Assignment to curriculum	WAREM, Elective, 3rd semester WASTE, Elective, 3rd semester
11	Voraussetzungen Prerequisites	Prerequisite Modules : Sanitary Engineering (Waste: 021220012; Warem: 508 ME) Urban drainage and design of Wastewater treatment plants (Waste: 021210251; Warem: 542 ME) Chemistry and Biology for Environmental Engineers (Waste: 021230502; Warem: 546 ME)
12	Lernziele Intended learning outcome	The student knows and understands in theory and practice - the most important parameters to characterize water and waste water and the analytical methods to determine them (e.g. pH,

		nitrate, ammonium, phosphorus, alkalinity, acidity, permanganate index, conductivity, oxygen, loss of ignition, filterable matter). - important techniques for removal of water contaminants (e.g. ion exchange, precipitation, coagulation, sorption, neutralization, aerobic, anoxic and anaerobic degradation) - how to take representative samples out of the differentwaste streams and the relevant sampling errors The student is aware of the most important microbiological tools to detect, handle and use microorganisms in environmental engineering systems The student - is capable of interpreting and evaluating analytical data and based on these data to draw conclusions in order to evaluate the quality of water and the efficiency of processes for treatment of water and solid waste. - is able to apply the relevant laboratory test procedures to analyze compost within the quality assurance system and to interpret the results. - has the competence to develop a sampling procedure for household waste and to determine the waste composition by a sorting analyses - is able to apply selected test procedures in the field of hazardous waste and the analyses of odor samples
13	Inhalt Content	This course serves to the intensification of the theoretical knowledge in sanitary engineering by practical work in the laboratory and an accompanying student seminar. The experiments offered belong thematically to the three main areas: - water and waste water - solid waste - chemistry and microbiology The experiments are mainly performed directly by the students in groups of 3 to max. 6 or offered as demonstration experiments.
14	Literatur/Lernmaterialien Literature/Learning material	Description of Experiments (available as download, pdf) Handouts for seminar work
15	Lehrveranstaltungen und Lehrformen Course units and teaching methods	Practical Work and Seminar: Part Water and Wastewater: 5*6 hours Part Chemistry and Microbiology: 5*6 hours Part Solid Waste: 5*6 hours
16	Abschätzung des Arbeitsaufwands Estimation of workload	Time of attendance (incl. seminar work): 90 h Preparation time (before/ after practical work): 50 h Preparation of examination: 40 h

17a	Studienleistungen (unbenotet) Course achievements (without mark)	Pre-condition for exam: - written record of the practical experiments
17b	Prüfungsleistungen (benotet) Examination achievements (with mark)	presentations
18	Grundlage für… Basis for…	
19	Medienform Media	- Explanation of experiments and presentation of the results of the practical work by the students (flip chart, blackboard) - Practical Work in chemical and microbiological laboratories