



Waste minimization and resources use optimization course programme

	Monday 30.3., IT 133	Tuesday 31.3., IT 133	Wednesday 1.4., IT 133	Thursday 2.4. , IT 133	Friday 3.4. , IT 134
8:45-9:00					
9:00-9:15		Green Engineering, catalysis for resource and energy efficiency (Prof. Riitta Keiski)	Cleaner production and environmental management systems (Dr. Terry Tudor)	Resource use optimization in the food sector, challenges for sustainable production and consumption (Prof Sirpa Kurppa)	Chemistry for Sustainable Production (Prof. Marja Lajunen)
9:15-9:30	Welcome and course presentation; Sustainability, sustainable production and consumption (Dr. Eva Pongrácz)				
9:30-9:45					
9:45-10:00					
10:00-10:15					
10:15-10:30	Coffee break				
10:30-10:45	Coffee break		Coffee break	Coffee break	Coffee break
10:45-11:00		The energy challenge: Biorefineries for energy- and material efficiency. (Prof. J-P Mikkola)	Funding cleaner production: Funding instruments of NEFCO, experiences (Elisabet Paulig-Tönnnes)	Carbon footprint and other tools for measuring the env. impact of consumption (Prof Sirpa Kurppa)	Course summary, instructions for the examination (Eva Pongrácz)
11:00-11:15	EU waste legislation, the waste management hierarchy (Dr. Eva Pongrácz)				
11:15-11:30					
11:30-11:45					
11:45-12:00					
12:00-12:15	Lunch break				
12:15-12:30					
12:30-12:45					
12:45-13:00					
13:00-13:15					
13:15-13:30	Waste minimization, waste minimization clubs in the UK (Dr. Terry Tudor)	UN Global Compact ten principles, Miniature Earth	Waste mapping, Envirowise guides (Dr. Terry Tudor)	Eco-efficiency: toolbox, implementation, measuring, case-studies, eco-innovations (Eva Pongrácz)	Orientation for the exercise work, experiences from earlier courses (Eva + students)
13:30-13:45		Coffee break			
13:45-14:00					
14:00-14:15					
14:15-14:30					
14:30-14:45		The urban challenge: Energy and material efficiency in building and living, Ecocities (Prof. Eero Paloheimo)	Coffee break		
14:45-15:00	Coffee break				
15:00-15:15			Exercise on waste mapping (Dr. Terry Tudor)	The clean water challenge: water- vs. energy-efficiency (Prof. Simo Pehkonen)	
15:15-15:30	Exercise on waste minimization (Dr. Terry Tudor)				
15:30-15:45					
15:45-16:00					
16:00-16:15		Human resources: awareness, values; needs vs. wants, Discussion with Terry, Simo, Eva and Eero	Discussion	Discussion	
16:15-16:30					
16:30-16:45					
16:45-17:00	Discussion				

Course info

An intensive, one week course on the theory, practice and practical guidelines on waste minimization, and resources use optimization. Theoretical concepts and state of the art tools of sustainable production and consumption will be presented, and legislative issues will be introduced. There will be a written exam based on the material of the lectures. Credits will be awarded separately for participating this theory part and passing the exam (3 op.). **Note:** For those students, who wish to receive credits from the course, participation will be obligatory on at least 80% of the lectures. Active participation on in-course exercises and discussion is also required.

For the practical part, students will be advised to investigate the use of waste minimization tools in industry. The use of waste mapping tools will be presented. Using the knowledge gained in the lecture, the students will contact industry, preferably a small or medium-sized enterprise, and perform a waste audit and evaluate their potential for waste minimization. Each assignment will have to be individually discussed, personalized tools and continuous advising will be provided to perform and report the audits. The students will write and hand in reports of the practical exercise, for which 5-7 op. credits will be awarded depending on its extent. The practical part is optional, however, in order to do the mapping, you need to participate the lectures and pass the course.

Credits (ECTS): 3 + (5-7) (theory part + exercise)

Place: University of Oulu, Tietotalo 2 (street address Rakentajantie 3, M entrance), lecture rooms IT 133 and 134

Organizer: Mass and Heat Transfer Process Laboratory and NorTech Oulu, Thule Institute

Contact person: Eva Pongrácz, eva.pongracz@oulu.fi

Lecturers: Prof. Riitta Keiski, University of Oulu, Department of Process and Environmental Engineering
Prof. Marja Lajunen, University of Oulu, Department of Chemistry
Prof. Sirpa Kurppa, Agrifood Research Centre (MTT)
Elisabet Paulig-Tønnes, Nordic Environmental Finance Corporation (NEFCO)
Prof. Eero Paloheimo
Prof. Jyri-Pekka Mikkola, Umeå University/Åbo Akademi University
Dr. Terry Tudor, University of Northampton, SITA Centre for Sustainable Wastes Management
Prof. Simo Pehkonen, Director of the Centre of Expertise in Water in Industry Cluster (CEWIC)
Doc. Eva Pongrácz, Director of the Centre of Northern Environmental Technology, University of Oulu, Thule Institute

Enrolment: by 23.3.2009, registration to [eva.pongracz\(at\)oulu.fi](mailto:eva.pongracz(at)oulu.fi)

Course format: Home exam and a report on the exercise

