

Degree Structure for Academic Year 2020-21

Master of Science (Tech), Degree Programme in Environmental Engineering

2 years, 120 ECTS

Course			Lukukausi							
Code	Course name	ECTS	Periodi	Autumn 2020	Spring 2021	Autumn 2021	Spring 2022			
<b>Kestävät energiajärjestelmät /Sustainable Energy Systems, 60 ECTS</b>										
488209S	Renewable Energy	5	1	5						
488507S	Energy Systems Engineering	5	1	5						
488506S	Sustainable Urban Energy	5	4			5				
488501S	Smart Grid I: Integrating renewable energy sources	5	2		5					
488502S	Smart Grid II: Smart buildings/smart customers in the smart grid	5	3		5					
488503S	Smart Grid III: Smart energy networks	5	4			5				
488206S	Sustainable Energy Project	5	3,4					2,5	2,5	
488504S	Fundamentals of Nuclear Energy	5	1	5						
<i>Choose 20 ECTS of following courses</i>										
488203S	Industrial Ecology	5	1	5						
488216S	Environmental Engineering Project	5	3,4		2,5	2,5				
488402S	Sustainable Development	5	3,4		2,5	2,5				
488143A	Environmental Impact Assessment	5	1				5			
477224S	Biojalostamot (Biorefineries)	5	2	5						
782608S	Battery chemistries and components	5	3		5					
477625S	Voimalaitosautomaatio	5	3		5					
	<i>Energy Economics (Piloting in spring 2020)</i>	5	4			5				
<b>SUPPLEMENTARY COURSES, 30 ECTS</b>										
031022P	Numerical analysis	5	3		5					
477005S	Advanced practical training	5	2							
	Free choice courses, Energy Systems	20		5				4,5	4,5	
<b>MASTER'S THESIS, 30 ECTS</b>										
488980S	Master's Thesis	30	3,4						15 15	
480429S	Maturity Test	0	4						0	
		129		20 15	25 20	12 7	15 15			

Course			Term							
Code	Course name	ECTS	Periodi	Autumn 2020	Spring 2021	Autumn 2021	Spring 2022			
<b>Teollisuuden ympäristötekniikka /Industrial Environmental Engineering, 60 ECTS</b>										
477309S	Process and environmental catalysis	5	1	5,0						
488402S	Sustainable Development	5	3,4		2,5	2,5				
488203S	Industrial Ecology	5	1	5,0						
488216S	Environmental Engineering Project	5	3,4		2,5	2,5				
488209S	Renewable Energy	5	1	5,0						
488214S	Air Pollution Control Engineering - Practical Solutions	5	2	5,0						
488215S	Industry and Environment (Environmental Load of Industry)	5	2	5,0						
477207S	Industrial Water and Wastewater Technologies	5	3		5					
477306S	Non-ideal reactors	5	3		5,0					
477312S	Science and Professional Ethics	5	3,4		2,5	2,5				
<i>Choose 10 ECTS of following courses</i>				5,0		5,0				
477224S	Biorefineries	5	2					0		
477223S	Advanced Process Design	5	3,4		0	0				
488206S	Sustainable Energy Project	5	1,2					0	0	
477310S	Advanced catalytic processes	5	2	0						
477311S	Advanced separation processes	5	2					0		
477225S	Reaktiokinetikka	5	4			0				
488143A	Environmental Impact Assessment	5	1					0,0		
477307S	Research Methodology	5	1-4	0,0	0,0	0,0	0,0			
<b>SUPPLEMENTARY COURSES, 30 ECTS</b>										
031022P	Numerical analysis	5	3		5,0					
477005S	Advanced practical training	5	2					5,0		
	Free choice courses	20						10,0	10,0	
<b>MASTER'S THESIS, 30 ECTS</b>										
488980S	Master's Thesis	30	3,4						15 15	
480429S	Maturity Test	0	4						0	
	(*)The course is arranged in alternate years	120		15 15	22,5 7,5	15 15	15 15			

Course			Term				
Code	Course Name	ECTS	Period	Autumn 2020	Spring 2021	Autumn 2021	Spring 2022
<b>Vesi- ja ympäristötekniikka / hydrology and water management, 60 ECTS</b>							
488110S	Water and Wastewater Treatment	5	1	5			
488134S	Hydrogeology and groundwater engineering	5	3		5		
488127S	Field measurements, site investigations and geotechnical tests	5	1,2	2,5	2,5		
488128S	Laboratory tests in water resources engineering	5	3,4		2,5	2,5	
488144A	Water distribution and sewage networks	5	2	5			
488143S	Environmental Impact Assessment	5	1			5	
488136S	Integrated water resources management (*)	5	1	5			
<i>Choose five of following</i>				5	10	5	5
488145S	Data analysis for water resources (*)	5	2	0			
488138S	Cold climate hydrology (*)	5	2				0
488139S	Surface water quality modelling (*)	5	1			0	
488123S	River Engineering and Hydraulic Structures (*)	5	2				0
488140S	Groundwater modelling and management	5	4			0	
488131S	Geoenvironmental engineering (Geoympäristötekniikka)	5	1			0	
488146S	Urban water management	5	3		0		
<b>SUPPLEMENTARY COURSES, 30 ECTS</b>							
031022P	Numerical analysis	5	3		5		
477005S	Advanced practical training	5	2				5
	Free choice courses	20		2,5	7,5	2,5	2,5
<b>MASTER'S THESIS, 30 ECTS</b>							
488980S	Master's Thesis	30	3,4				15
480429S	Maturity Test	0	4				0
	(*)The course is arranged in alternate years	120		15	15	15	15

Course			Term				
Code	Course Name	ECTS	Period	Autumn 2020	Spring 2021	Autumn 2021	Spring 2022
<b>SUPPLEMENTARY COURSES, 30 ECTS / For foreign students</b>							
030008P	Information Skills for foreign degree students	1		1			
031022P	Numerical analysis	5	3		5		
477005S	Advanced practical training	5	2				5
488102A	Hydrological Processes (only for hydrology and water management students)	5	1	5			
	Free choice courses	10					
<i>Finnish language courses: Choose at least 5 ECTS of following</i>							
900017Y	Survival Finnish Course	2	1,2/3,4				
900013Y	Beginners' Finnish Course 1	3	1,2/3,4				
900053Y	Beginners' Finnish Course 2	5	3,4				
900015Y	Intermediate Finnish Course 1	5	1,2				
900016Y	Intermediate Finnish Course 2	5	3,4				
900027Y	Special Course in Finnish: Writing Skills	3	3,4				
900054Y	Conversational Skills in Finnish	3	1,2				