

**Degree Structure for Academic Year 2019-2020**  
**Master of Science (Tech), Degree Programme in Environmental Engineering**  
**2 years, 120 ECTS**

Course			Lukukausi							
Code	Course name	ECTS	Periodi	Autumn 2019	Spring 2020	Autumn 2020	Spring 2021			
<b>Energiajärjestelmät /Energy Systems, 60 ECTS</b>										
488209S	Renewable Energy	5	1	5						
488507S	Energy Systems Engineering	5	1	5						
72xxxxS	Energy Economics	6	4			6				
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	1,2				2,5	2,5		
488504S	Fundamentals of Nuclear Energy	5	1				5			
<i>Choose 15 ECTS of following courses</i>				5	5		5	5		
488216S	Environmental Engineering Project (Industrial Ecology)	5	1,2	0	0					
488402S	Sustainable Development	5	2		0	0				
488143A	Environmental Impact Assessment	5	1				0			
477224S	Biojalostamot	5	2					0		
477309S	Process and environmental catalysis	5	1	0						
477625S	Voimalaitosautomaatio	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, Energy Systems	20		5	4	2,5	2,5			
<b>MASTER'S THESIS, 30 ECTS</b>										
488980S	Master's Thesis	30	3,4					15	15	
480429S	Maturity Test	0	4						0	
		120		15	15	14	16	15	15	

Course			Term							
Code	Course name	ECTS	Periodi	Autumn 2019	Spring 2020	Autumn 2020	Spring 2021			
<b>Teollisuuden ympäristötekniikka /Industrial Environmental Engineering, 60 ECTS</b>										
477309S	Process and environmental catalysis	5	1	5,0						
488402S	Sustainable Development	5	2		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	4	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		5,0					
477306S	Non-ideal reactors	5	2	5,0						
477312S	Science and Professional Ethics	5	3		5,0					
<i>Choose 10 ECTS of following courses</i>				5,0		5,0				
477224S	Biojalostamot	5	2				0,0			
477223S	Advanced Process Design	5	3,4		0,0	0,0				
488206S	Sustainable Energy Project	5	1,2			0,0	0,0			
477310S	Advanced catalytic processes	5	2	0,0						
477311S	Advanced separation processes	5	2				0,0			
477225S	Kinetiikka	5	3,4							
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	20	20	5	15	15	

Course			Term							
Code	Course Name	ECTS	Period	Autumn 2019	Spring 2020	Autumn 2020	Spring 2021			
<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			
488137	Statistical Hydrology (*)	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			
488141S	Urban hydrology	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	10	5	
<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	15	15	15	15 15	