Metropolia UAS **Degree Programme in Energy and Environmental Technology 17.9.2021**

		extent of credits	Strong mathematical-scientific engineering background	Good skills of interaction	Project management	Clean and sustainable energy production technologies	Circular economy and sustainable development	Production of clean water	Material and energy efficiency	**Learning competence**	**Ethical competence**	**Working community competence**	**Innovation competence**	**Multicultural competence**	**Technological competence**
1st year of study, **Orientation and introduction to studies and own field of subject**	**Introduction to Studies and Profession**	**30**													
	Orientation to Field and Studies	5		x						x	x	x			
	Engineering English and Communication Skills	5		x						x				x	
	Introductory Project and Professional Communication	5	x	x	x					x		x	x		
	Fundamentals of Chemistry	5	x							x					
	Fundamentals of Mathematics and Natural Sciences 1	5	x							x					
	Fundamentals of Mathematics and Natural Sciences 2	5	x							x					
	Introduction to Energy and Environmental Technology	**30**													
	Industrial Business	5		x	x							x			
	Engineering Swedish / Finnish as a Second Language: Finnish at Work	5		x						x				x	
	Fundamentals of Mathematics and Natural Sciences 3	5	x							x					
	Mathematical Tools for Energy and Environmental Engineering	5	x							x					
	Applied project for Energy and Environmental Engineering	5	x	x	x					x		x	x		x
	Basics of Energy and Environmental Technology	5				x	x	x	x	x					x
	In total	60													
2nd year of study, **Basic studies of energy and environmental engineering and development of professional identity**	**Common professional studies for Energy and Environmental Engineering**	**40**													
	Thermodynamics	5	x			x			x	x					x
	Fluid Mechanics and Basics of Heat Transfer	5	x			x			x						x
	Environmental Management	5				x	x			x	x				
	Measurement Systems and Data Handling	5	x												x
	Fundamentals of Mathematics and Natural Sciences 4	5	x												
	Computer Aided Design	5	x												x
	Life Cycle Assessment	5				x	x		x						
	Air Pollution Engineering	5				x	x								x
	Fundamentals of Power Plant Engineering (Energy Production Technologies)	**20**													
	Fundamentals of Hydraulics and Mechanics of Materials	5				x									x
	Electrical Engineering and Electric Machines	5				x									x
	Energy Technology of Power Plant	5	x			x									x
	Basics of Welding Engineering and Manufacturing Methods	5				x									x
	Resource Effective Society (Environmental Engineering)	**5**													
	Material and Energy Efficiency	5					x		x						x
	Water and Waste Treatment Technologies (Environmental Engineering)	**15**													
	Environmental Chemistry	5	x												
	Analysis of Environmental Chemistry	5	x												x
	Equipment and Processes in Environmental Engineering	5	x												x
	In total	60													
3rd year of study, **Sustainable energy, clean water and the environment**	**Fundamentals of Power Plant Engineering (Energy Production Technologies)**	**15**													
	Design of Heat Exchangers	5	x			x									
	Steam and Gas Turbines	5				x									x
	Boilers and Steam Generators	5				x									x
	Water and Waste Treatment Technologies (Environmental Engineering)	**15**													
	Waste Treatment Technology	5				x	x								x
	Water Treatment Technologies	5						x							x
	Water in Municipal Services	5						x							
	Projects on Energy and Environmental	**20**													
	Multidisciplinary Innovation Project	10		x	x					x		x	x	x	x
	Special assignment in Energy and Environmental Engineering	5		x	x					x		x	x	x	x
	Special Project in Energy and Environmental Engineering	5		x	x					x		x	x	x	x
	Energy Production (Energy Production Technologies)	**25**													
	Piping and Plant Design	5				x			x						
	Measurement Systems, Condition Monitoring and Maintenance in Power Plants	5				x									
	Alternative and Renewable Energy Sources	5				x	x								x
	Power Plants	5				x									x
	District Heating Engineering	5				x									x
	Water and Waste Treatment Technologies (Environmental Engineering)	**5**													
	Water Management Systems	5						x							
	Resource Effective Society (Environmental Engineering)	**20**													
	Fresh Water and Sewage Piping Design and Maintenance	5						x	x						x
	Resource Effective Society	5			x		x	x	x						
	Distributed Energy Production	5				x									x
	Computer Aided Environmental Engineering	5				x	x			x					x
	In total	60													
4th year of study, **Growing into a professional in the field of energy and environmental engineering**	**Bachelor's Thesis**	**15**													
	Bachelor's Thesis	15	x	x	x								x		x
	Work Placement	**30**													
	Work Placement 1	15		x								x	x	x	x
	Work Placement 2	15		x								x	x	x	x
	Elective Studies	**15**													
	In total	60													