Metropolia UAS Engineering 31.1.2022	Biotechnology and Chemical	extent of credits	Strong engineering skills in mathematics and science	Good interaction skills	Skills to conduct projects	Clean and sustainable production technologies	Clean water production	Efficiency for using materials and energy	Learning to learn	Ethics	Operating in a workplace	Sustainable development	Internationality and multiculturalism	Proactive development
1st Year of study	**Orientation to Biotechnology and Chemical Engineering**	**30**												
	Orientation to Field and Studies	5		x					x	x	x			
	Fundamentals of Chemistry 1	5	x						x			x		
	Introductory Project and Professional Communication	5	x	x	x				x		x			
	Fundamentals of Chemistry 2	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 the Industry	**30**												
	The World of Microbes	5	x					x				x		
	Math and Science Basics 3	5	x						x				x	
	Project Course in Biotechnology and Chemical Engineering	10	x	x	x						x	x		
	Analytical and Organic Chemistry	5	x				x		x					
	Industrial Processes and Materials	5				x	x	x	x			x		
	In total	60												
2nd Year of study	**Becoming an Expert in Biotechnology and Chemical Engineering**	**30**												
	Engineering Chemistry	5	x					x						
	Food Chemistry and Nutrition	5	x			x		x		x		x		
	Statistics and Design of experiments	5	x					x						
	Fluid mechanics and heat transfer basics	5	x		x	x	x	x	x			x		
	Basics of Materials technology	5	x					x				x		
	Engineering English and Communication Skills	5		x					x				x	
	Becoming an Engineer in Biotechnology and Chemical Engineering	**30**												
	Process Design Basics	5	x			x		x	x					
	Health, Safety and Environmental Responsibility	5	x			x	x	x		x		x		
	Industrial Business	5			x				x	x	x	x	x	
	Automation Technology	5	x				x			x				
	Process Operation Control and Maintenance	5	x			x	x	x		x				
	Engineering Swedish	5		x					x				x	
	Finnish as a Second Language: Finnish at Work	5		x					x				x	
	In total	60												
3rd Year of study	**Structure and Properities of Materials**	**10**												
	Advanced materials technology	10	x			x		x	x			x		
	Protection of Metal Structures	**25**												
	Corrosion and Methods for Corrosion Protection	5	x			x	x					x		
	Anticorrosive painting and hot dip coating	10	x	x		x		x				x		
	Industrial Coatings	5	x			x		x				x		
	Project on Metallic Coatings and Industrial Painting	5	x	x	x	x		x	x			x		
	Coatings in Construction	**15**												
	Coatings of Buildings and Their Life Cycle	10	x			x		x	x		x	x		
	Coating Project on Building Construction and Repair	5	x	x	x	x			x		x			
	Innovations Activities	**10**												
	Multidisciplinary Innovation Project	10	x	x	x		x	x	x		x	x	x	
	In total	60												
4th Year of study	**Bachelor's Thesis**	**15**												
	Bachelor's Thesis	15	x	x	x	x	x	x	x			x		
	Work Placement	**30**												
	Work Placement 1	15		x							x	x	x	
	Work Placement 2	15		x		x	x				x	x	x	
	Elective Studies	**15**												
	In total	60												