

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	Know-how for circular economy and sustainable development	Clean water production	Efficiency for using materials and energy	Learning competence	Ethical competence	Working community competence	Innovation competence	Multicultural competence	Technological competence
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	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									x
	Math and Science Basics 3	5	x										x				x	
	Project Course in Biotechnology and Chemical Engineering	10	x	x	x			x							x	x		
	Analytical and Organic Chemistry	5	x							x			x					x
	Industrial Processes and Materials	5				x		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						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				x		x
	Basics of Materials technology	5	x					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					x
	Health, Safety and Environmental Responsibility	5	x			x		x	x			x		x				x
	Industrial Business	5			x			x				x	x	x			x	x
	Automation Technology	5	x							x								x
	Process Operation Control and Maintenance	5	x			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	Phenomena and Unit Operations in Chemical Engineering	30																
	Equilibria and kinetics	5	x			x												x
	Phenomena and material and energy balances in Process Technology	5	x			x		x		x	x							x
	Unit processes 1	5	x							x								x
	Fluid Mechanics and Heat Transfer advanced course	5	x			x				x	x							x
	Plant Design basics	5			x	x		x		x	x							x
	Reactors and Catalysis	5	x			x												x
	Innovation and Sustainable Design of Processes	30																
	Multidisciplinary Innovation Project	10	x	x	x			x		x	x	x	x			x	x	x
	Unit processes 2	5	x			x				x								x
	Piping design	5	x			x												x
	Plant Design Advanced Course	5	x		x	x		x		x	x							x
	Lab Workshop, Chemical Engineering	5	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	x	x			x		x
	Work Placement	30																
	Work Placement 1	15		x				x							x	x	x	x
	Work Placement 2	15		x				x	x	x					x	x	x	x
	Elective Studies	15																
	In total	60																

