

Metropolia UAS Engineering 29.1.2021		Biotechnology and Chemical Engineering		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		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																
	Math and Science Basics 3	5	x									x					x	
	Analytical and Organic Chemistry	5	x							x		x					x	
	The World of Microbes	5					x	x	x			x					x	
	Industrial Processes and Materials	5					x	x	x	x		x					x	
	Project Course in Biotechnology and Chemical Engineering	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			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				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				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	Utilization of Biotechnology	15																
	Enzymes and industry	5	x				x	x	x	x	x							x
	DNA methods in analytics	5	x				x	x	x	x	x	x	x					x
	Biotechnology and Gene Engineering Project	5	x	x	x		x	x				x	x	x	x			x
	Bio and Food Processes	15																
	Introduction to Bio and Food Technology	5	x					x			x							x
	Biotechnological processes	5	x				x	x			x							x
	Food Processes and Analytics	5	x				x	x	x	x	x							x
	Food Quality and Safety	15																
	Product Safety	5	x				x	x	x				x					x
	Packaging and Logistics	5			x	x	x	x	x	x	x	x	x	x	x			x
	Sensory evaluation	5		x	x						x	x		x	x			
	Products in the Future	15																
	Sustainable Product Development	5	x				x	x	x	x			x			x		x
Multidisciplinary Innovation Project	10	x	x	x			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	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																	