

Curriculum B-CSE 2024-2025

and **prominent** essential skills per module (in **bold** : explicitly taught, reflected on, and assessed in that module)

YEAR 1

1 Chemistry 202000721	EC	2 Process Engineering 202000724	EC	3 Materials Science 202000727	EC	4 Equilibria & Electrochemistry 202000730	EC
Jonkheijm		Benes		van der Hoef		Susarrey Arce	
Introduction to Mathematics & Calculus 1A	4	Mathematics: Calculus 1B	3	Mathematics: Linear Algebra	3	Mathematics: Calculus 2	3
Fundamentals of chemistry - (in)organ. structures - reaction categories - reaction mechanisms - polymers (synthesis) - project	8.5	Thermodynamics - phases - laws - cycles - Maxwell relations	4.5	Materials Science - quantum phenomena - inorg. mat. Science - polymers (physical prop.) - project	9.5	Equilibria - chemical equilibria - phase equilibria	5
		Process engineering - mass and energy balances - distillation - project	5			Think like a researcher (lab course in Electrochemistry) - electrochemistry (theory) - lab course & project	7
Lab course 1: Basic skills & Synthesis	2.5	Lab course 2: Energy & Process engineering	2.5	Lab course 3: Materials	2.5		

inquiry and analysis
creative thinking
written communication
oral communication
information literacy
teamwork
problem solving
civic engagement
intercultural knowledge

teamwork
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inquiry and analysis
critical thinking
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problem solving

YEAR 2

5 Industrial processes 202000733	EC	6 Transport Phenomena 202000736	EC	7 Molecules & Materials 202000740	EC	8A Process design 202000744	EC	8B Materials Science & Technology 202000748	EC	
Faría Albanese		Brilman		Cornelissen		Elective module: choose 8A or 8B				
						van der Ham		Elshof		
Vector calculus	2	Numerical Methods	3.5	Organic and Bio-organic Chemistry incl. Lab course	8	Introduction Chemical Reaction Engineering (incl. process control)	4	Chemistry & Techn. of Inorganic Materials	4	
Kinetics & Catalysis	4.5	Physical Transport Phenomena - fluid dynamics - heat transfer - mass transfer	7.5			Introduction Separation Methods	4	Chemistry & Techn. of Organic Materials	4	
Industrial Chemistry & Processes	4.0			Project Transport Phenomena	4	Interface Science incl.project	3	Project process design	7	Advanced Materials Science - materials S&T - project
Project Sustainable Industrial Chemistry	4.0	Characterization of Molecules & Materials Chemistry incl. Lab course	4							
Essential Skills	0.5									

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YEAR 3

9 Minor 1	EC	10 Minor 2	EC	11 Intro Bachelor assignment 202000752	EC	12 Bachelor assignment 202000762	EC
				van Lente		van Lente	
Minor module - at the UT, or - exchange semester, or - getting teacher qualification	15	Minor module - at the UT, or - exchange semester, or - getting teacher qualification	15	Research *	1.5	Bachelor assignment** - lab work / simulations - interpreting results - report writing - final presentation	15
				Essential Skills II *	1		
				Statistics	3		
				Ethics	2.5		
				Preparation Bachelor Assignment*	2		
				Elective: Biochemistry / Bionanotechnol. / Process Equipment Design / Study Tour prep. / some Applied Physics courses / Other (via Board of Examiners)	5		

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problem solving
civic engagement
ethical reasoning

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integrative learning

Notes

* Students from cohort 2021 or earlier take Research for 2.5 EC (manually register for 202000753) and do not take Essential Skills II.

** PBA and Bachelor assignment are also possible in Q1 with permission of the Examination Board.