

**Specialisation:
Profile:**

**Chemical Process Engineering
Principles of Advanced Process Engineering**

Legend	Compulsory Courses Specialization	Profile Courses	Electives	Electives non CSE
	Deficiency Courses			

	Year 1			
	Quarter 1A	Quarter 1B	Quarter 2A	Quarter 2B
Compulsory Courses Specialization	Advanced Chemical Reaction Engineering (5 EC; Brilman/Kersten)		Process Plant Design incl. Thermodynamics and Flowsheeting (15 EC; van der Ham/van den Berg)	
	Advanced Catalysis (5 EC; Lefferts/Mul)	Advanced Molecular Separations (5 EC; de Vos/Schuur)		
			Process Dynamics & Control (2.5 EC; Zondervan)	

	Year 1			
	Quarter 1A	Quarter 1B	Quarter 2A	Quarter 2B
Profile Courses	Transport Phenomena (5 EC; Mahmoudi)	Design and simulation of chemical batch processes (2,5 EC; Franke)	Scaling-up in Chemical Engineering (2,5 EC; Brilman)	Process Optimization (2,5 EC; Zondervan)

	Year 1			
	Quarter 1A	Quarter 1B	Quarter 2A	Quarter 2B
Electives scheduled	Multi-component Mass Transport (5 EC; Benes)		Labcourse SPT (2,5 EC; Kersten)	
	Advanced Colloids and Interfaces (5 EC; Wood)	Cost Management & Engineering (5 EC; Joosten)	Process Equipment Design (5 EC; Bramer)	Numerical Methods for Engineers (5 EC; Lammertink)
		Electrochemistry: fundamentals and techniques (5 EC; Altomare)	Sustainable Nanotechnology (5 EC; Susarrey Arce)	Electrocatalysis: Materials and Spectroscopy (5 EC; Katsoukis)

	Year 1			
	Quarter 1A	Quarter 1B	Quarter 2A	Quarter 2B
2,5 EC Topics	Entrepreneurial Toolbox for Engineers (Fernandez)	Ion Transport in Fluids (Wood e.a.)	Chem. Process Analysis (Susarrey Arce)	Membrane Processes (Lammertink/De Vos/Benes)
			Advanced Reaction Kinetics (Faria)	Membrane Materials (Lammertink/De Vos/Benes)
			Electrochemical Engineering (Banerjee)	Machine Learning in Chemistry (Franke)

	Year 1			
	Quarter 1A	Quarter 1B	Quarter 2A	Quarter 2B
Electives n.s.	Capita Selecta Research Group (5 EC)			
	Contract Research (5 EC)			
	Sustainable Chemicals (2,5 EC; Ruiz Ramiro)			
	Sustainable Fuels (2,5 EC; Ruiz Ramiro)			
	Theory of Phase Equilibria (5 EC; van der Hoef)			

	Year 1			
	Quarter 1A	Quarter 1B	Quarter 2A	Quarter 2B
Deficiency	Workshop Aca. Skills (0,5 EC)			
	Matlab for PM CSE* (2,5 EC)			
	Chemical Reaction Engineering (3,5 EC)			
	Math for Engineers (0 EC; optional)			

* Matlab for PM CSE (202400599) replaces Matlab voor pre-masters ET (202001390)