

# MSc Chemical Engineering

Betlem, March 2013, version 3

Molecular & Materials Engineering			
M1 Quarter	M2 Quarter	M3 Quarter	M4 Quarter
AMM Molecular and biomolecular CT 5 EC, Huskens	AMM Structure & properties of organic materials 5 EC, Vancso	AMM Structure & properties of inorganic materials 5 EC, Rijnders	AMM Applications 5 EC Lammertink
AMM Characterization 5 EC Schön		AMM Project organic materials 5 EC, Hempenius	AMM Project inorganic materials & molecular S&T 5 EC, Koster

**Figure 1** Scheme of the compulsory subjects in the Molecular & Materials Engineering track

Chemical & Process Engineering			
M1 Quarter	M2 Quarter	M3 Quarter	M4 Quarter
Chemical reaction engineering 5EC, Brillman		Multiphase reaction technology 5EC, Coord: Kersten	
Surface phenomena & microfluids 5EC, Tsai, Gardeniers, Lammertink	Advanced molecular separations 5EC, Coord: De Vos	Process plant design Inclusief Thermodynamica & flowsheeting 15 EC Coordinator: Van der Ham	
Elective 5EC	Elective 5EC		
Elective 5EC		Elective 5EC	

**Figure 2** Scheme of the compulsory subjects in the Chemical & Process Engineering track from 2013/2014 to and including 2015/2016

## Course list Chemical Engineering 2013

Subjects of M&ME groups	Lecturer	Block	E	M&M	C&PE	Remarks
C.S. Biomaterials Science and Technology	Grijpma (BST)	n.s.	X			
C.S. Biomedical Chemistry	Engbersen (BMC)	n.s.	X			
C.S. Biomolecular NanoTechnology	Cornelissen (BNT)	n.s.	X			
C.S. Inorganic Materials Science	Rijnders (IMS)	n.s.	X			
C.S. Macromolecular Nanotechnology	Vancso (MTP)	n.s.	X			
C.S. Molecular Nanofabrication	Huskens (MnF)	n.s.	X			
C.S. Supra-molecular Chemistry and Technology	Verboom (SMCT)	n.s.	X			
AMM – Molecular and Biomolecular Chemistry and Technology	Huskens (coord.)	1		C		
Physical Organic Chemistry	Jonkheijm	3	X			
AMM – Inorganic Materials Science	Rijnders (coord.)	3		C		
Lab Course Advanced Materials	Ten Elshof	n.s.	X			
AMM Project Inorganic Materials & Molecular S&T	Koster (coord.)	4		C		
Chemistry of Inorganic Materials and Nanostructures	Ten Elshof	1	X			
Imperfections	Koster	n.s.	X			
AMM – Characterization	Schön (coord.)	1		C		
AMM – Organic Materials Science	Vancso (coord.)	2		C		
Polymers & Material Science Practice Lab course	Hempenius	1	X			
AMM Project Organic Materials	Hempenius (coord.)	3		C		
Polymer Physics	Vancso	n.s.	X			
Organic Chemistry of Polymers	Engbersen/ Paulusse	n.s.	X			
Polymers for Biomedical Applications Lab course	Grijpma	n.s.	X			
Biochemistry	Poot	4	X			
Controlled Drug and Gene Delivery	Engbersen	2	X			
Literature Essay Minor Subject	Ten Elshof	n.s.	X			

Subjects of CP&E / M&ME groups	Lecturer	Block	M&ME	C&PE	EM&E	Remarks
C.S. Catalytic Processes and Materials	Lefferts (PBM)	n.s.	X	X		
C.S. Inorganic Membranes	Nijmeijer A. (IM)	n.s.	X	X		
C.S. Membrane Technology	Nijmeijer K. (MTG)	n.s.	X	X		
C.S. Mesoscale Chemical Systems	Gardeniers (MCS)	n.s.	X	X		
C.S. Photo-Catalytic Synthesis	Mul (PCS)	n.s.	X	X		
C.S. Soft matter, Fluidics and Interfaces	Lammertink	n.s.	X	X		
AMM – Applications	Lammertink (coord.)	4	C			
Advanced Molecular Separations	de Vos & Schuur	2	X	C		2013 new compulsory
Chemical Product Development	Nijmeijer K.	n.s.		X		
Multi-component mass transport	Benes	1-2		X		per 2013 in stead of Adv. Mol. Separations
Multi-component mass transport & Water treatment	Benes Kemperman	1-2			C	
Batteries, Fuel Cells and Electrolysers	Nijmeijer K. Bouwmeester ea	2	X		C	
Membranes for Gas Separation	Nijmeijer K. Bouwmeester ea	1-2	X	X	C	
Membrane Process Plant Design	van der Ham	1		X	C	
Advanced Ceramics	Winnubst	n.s.	X			
Biomaterials, materials for hard tissue replacements	Winnubst	3	X			
Defects and transport in solids	Bouwmeester	3-4	X			
Surface Phenomena & Microfluidics	Tsai, Gardeniers Lammertink	1		C		2013 new compulsory
Microfluidic Concepts & Devices	Tsai, Gardeniers	1			C	
Colloids and Interfaces	Lammertink	1	X	X		
Intro. to Computational Fluid Dynamics	Lammertink	2		X		
Theory of Phase Equilibria	van der Hoef	1	X	X		
Catalysis for Sustainable Technologies	Seshan	2	X	X		
Catalysis in the Process Industry	Seshan	4	X	X		
Photocatalytic Synthesis	Baltrusaitis, Mul	n.s.				in preparation
Contract research		n.s.	X	X		

Subjects of CP&E groups	Lecturer	Block	M&ME	C&PE	Remarks
C.S. Sustainable Process Technology	Kersten e.o.	n.s.		X	replaces C.S. TCCB
Thermodynamics and Flowsheeting for C&PE students	Van der Ham	2 → 3		C	will become part of PPD
Thermodynamics and Flowsheeting for <u>non</u> -C&PE students	Van der Ham	2	X		optional
Chemical Reaction Engineering	Brilman	1-2		C	
Multiphase Reaction Technology	Kersten	3-4		C	
Process Plant Design	van der Ham(C) van den Berg	3-4		C	compulsory per 2013 from 10 to 15 EC

Subjects of other educational programmes	Lecturer	Block	M&ME	C&PE	From	Remarks
Biomedical Materials Engineering II	Poot (coord.)	-	X		BME	see schedule BME
Biomedical Membrane Applications	Stamatialis	-	X		BME	see schedule BME
Membrane Technology Practical work	Stamatialis	-	X		BME	see schedule BME
Cost, Management and Engineering	Joosten	2		X	IO/ ME	by MB
Process Equipment Design	Van der Meer	3		X	ME	replacement per 2013 for ChEng Process Equipment Design
Transport Phenomena	Van der Meer	1		X	ME	replacement per 2010 for ChEng Advanced Transport Phenomena