

# Engineering Nanoscience

## Study Year 1, Academic Year 2018/19 (Mandatory Courses)

Course Code	Credits	Cycle	S.Ex. stud.	Language	Course Name	Footnote	Links	18/19	18/19	18/19	18/19
								sp1	sp2	sp3	sp4
<a href="#">FMAA05</a>	15	G1	-	S	Calculus in One Variable		<a href="#">KS KE U W T</a>	1	2		
<a href="#">FAFA05</a>	12	G1	-	S	Physics - Waves, Thermodynamics and Atomic Physics		<a href="#">KS KE U W T</a>	1	2		
<a href="#">FFFA02</a>	7.5	G1	-	E	Nanoscience and Nanotechnology - an Introduction		<a href="#">KS KE U W T</a>	1	-	-	4
<a href="#">FMAB20</a>	6	G1	-	S	Linear Algebra		<a href="#">KS KE U W T</a>			3	
<a href="#">KOKA30</a>	12	G1	-	S	General, Inorganic and Organic Chemistry		<a href="#">KS KE U W T</a>			3	4
<a href="#">EDAA50</a>	7.5	G1	-	S	Programming, First Course		<a href="#">KS KE U W T</a>			3	4

**Study Year 2, Academic Year 2019/20 (Mandatory Courses)**

Course Code	Credits	Cycle	S.Ex. stud.	Language	Course Name	Footnote	Links	19/20	19/20	19/20	19/20
								sp1	sp2	sp3	sp4
<a href="#">EXTA70</a>	7.5	G1	-	S	Biology of the Cell		<a href="#">KS KE U W T</a>	1			
<a href="#">EMAB30</a>	6	G1	-	S	Calculus in Several Variables		<a href="#">KS KE U W T</a>	1			
<a href="#">EXTG50</a>	7.5	G2	-	S	Human Physiology		<a href="#">KS KE U W T</a>		2		
<a href="#">FAFA10</a>	9	G1	-	S	Physics - Quantum Phenomena and Nanotechnology		<a href="#">KS KE U W T</a>		2		
<a href="#">FFFF01</a>	7.5	G2	-	S	Electronic Materials		<a href="#">KS KE U W T</a>			3	
<a href="#">EMFF20</a>	7.5	G2	-	S	Mathematical Methods of Nanotechnology	X	<a href="#">KS KE U W T</a>			3	
<a href="#">EITE90</a>	7.5	G2	-	S	Electromagnetics and Electronics		<a href="#">KS KE U W T</a>				4

Course Code	Credits	Cycle	S.Ex. stud.	Language	Course Name	Footnote	Links								
							19/20 sp1	19/20 sp2	19/20 sp3	19/20 sp4					
<a href="#">KASE10</a>	7.5	G2	X	E	Functional Materials		<a href="#">KS</a>	<a href="#">KE</a>	<a href="#">U</a>	<a href="#">W</a>	<a href="#">T</a>				4

[EMFF20](#) Mathematical Methods of Nanotechnology: *Oral examination may take place outside the regular examination period.*

### Study Year 3, Academic Year 2020/21 (Mandatory Courses)

Course Code	Credits	Cycle	S.Ex. stud.	Language	Course Name	Footnote	Links	20/21	20/21	20/21	20/21
								sp1	sp2	sp3	sp4
<a href="#">EMSF70</a>	7.5	G2	-	S	Mathematical Statistics	X	<a href="#">KS KE U W T</a>	1			
<a href="#">FFFF10</a>	7.5	G2	X	E	Processing and Device Technology		<a href="#">KS KE U W T</a>	1			
<a href="#">ERTF05</a>	7.5	G2	-	S	Automatic Control, Basic Course		<a href="#">KS KE U W T</a>		2		
<a href="#">KASE15</a>	7.5	G2	X	E	Materials Analysis at the Nanoscale		<a href="#">KS KE U W T</a>		2		
<a href="#">BMEF15</a>	7.5	G2	-	E1	Sensors		<a href="#">KS KE U W T</a>			3	
<a href="#">FAFF05</a>	15	G2	-	S	Project Engineering at the Nanoscale		<a href="#">KS KE U W T</a>			3	4
<a href="#">FAFF50</a>	7.5	G2	-	S	Perspectives on Sustainable Development		<a href="#">KS KE U W T</a>				4

[EMSE70](#) Mathematical Statistics: *The course is to be studied together with MASB02*

**Specialisation hn - High-frequency and Nanoelectronics**

Course Code	Credits	Cycle	Mand./ Elect.	Year	From year	S.Ex. stud.	Language	Course Name	Footnote	Links				
											sp1	sp2	sp3	sp4
<a href="#">ETIN70</a>	7.5	A	O	4 - 21/22	4	X	E	Modern Electronics		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1			
<a href="#">EITP05</a>	7.5	A	O	4 - 21/22	4	X	E1	Nanoelectronics		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>			3	
<a href="#">EITE50</a>	7.5	G2	V	4 - 21/22	4	X	E	An Introduction to Wireless Systems		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1			
<a href="#">ETIN20</a>	7.5	A	V	4 - 21/22	4	X	E	Digital IC-design		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1			
<a href="#">EMFE15</a>	7.5	G2	V	4 - 21/22	4	-	E1	Quantum Mechanics and Mathematical Methods		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1			
<a href="#">FFFN30</a>	7.5	A	V	4 - 21/22	4	X	E1	Semiconductor Physics		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1			
<a href="#">FFFN01</a>	7.5	A	V	4 - 21/22	4	-	E	Advanced Processing of Nanostructures		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1	2		

Course Code	Credits	Cycle	Mand./ Elect.	Year	From year	S.Ex. stud.	Language	Course Name	Footnote	Links				
											sp1	sp2	sp3	sp4
<a href="#">ETIN25</a>	7.5	A	V	4 - 21/22	4	X	E	Analogue IC-design		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2		
<a href="#">ETEN10</a>	7.5	A	V	4 - 21/22	4	X	E	Antenna Technology		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2		
<a href="#">EITP01</a>	7.5	A	V	4 - 21/22	4	X	E1	High Speed Devices		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2		
<a href="#">ETIN50</a>	7.5	A	V	4 - 21/22	4	X	E	RF Amplifier Design		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2		
<a href="#">FFFN35</a>	7.5	A	V	4 - 21/22	4	X	E	The Physics of Low-dimensional Structures and Quantum Devices		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2		
<a href="#">FFFN25</a>	7.5	A	V	4 - 21/22	4	X	E	Optoelectronics and Optical Communication		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>			3	
<a href="#">FFFN01</a>	7.5	A	V	4 - 21/22	4	-	E	Advanced Processing of Nanostructures		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>			3	4

Course Code	Credits	Cycle	Mand./ Elect.	Year	From year	S.Ex. stud.	Language	Course Name	Footnote	Links					
										sp1	sp2	sp3	sp4		
<a href="#">EITP25</a>	7.5	A	V	4 - 21/22	4	X	E	Memory Technology for Machine Learning		<a href="#">KS</a>	<a href="#">KE</a>	<a href="#">U</a>	<a href="#">W</a>	<a href="#">T</a>	4

### Specialisation m - Materials

Course Code	Credits	Cycle	Mand./ Elect.	Year	From year	S.Ex. stud.	Language	Course Name	Footnote	Links					
											sp1	sp2	sp3	sp4	
<a href="#">KASN10</a>	7.5	A	O	4 - 21/22	4	X	E	Materials Chemistry		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1				
<a href="#">FAFN25</a>	7.5	A	V	4 - 21/22	4	X	E	Atomic and Molecular Spectroscopy		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1				
<a href="#">KASN25</a>	7.5	A	V	4 - 21/22	4	X	E	Polymer Chemistry		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1				
<a href="#">FFFN01</a>	7.5	A	V	4 - 21/22	4	-	E	Advanced Processing of Nanostructures		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1	2			
<a href="#">FKMN20</a>	7.5	A	V	4 - 21/22	4	X	E	Advanced Materials Technology		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2			
<a href="#">MAME55</a>	7.5	G2	V	4 - 21/22	4	X	E1	Aerosol Technology		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2			
<a href="#">FFFN05</a>	7.5	A	V	4 - 21/22	4	X	E	Nanomaterials - Thermodynamics and Kinetics		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2			

Course Code	Credits	Cycle	Mand./ Elect.	Year	From year	S.Ex. stud.	Language	Course Name	Footnote	Links				
											sp1	sp2	sp3	sp4
<a href="#">KASN20</a>	7.5	A	V	4 - 21/22	4	X	E1	Polymer Physics		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2		
<a href="#">FAFN15</a>	7.5	A	V	4 - 21/22	4	X	E	Crystal Growth and Semiconductor Epitaxy		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>			3	
<a href="#">FFFN01</a>	7.5	A	V	4 - 21/22	4	-	E	Advanced Processing of Nanostructures		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>			3	4
<a href="#">KASN15</a>	7.5	A	V	4 - 21/22	4	-	E1	Microscopic Characterization of Materials		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">T</a>				4
<a href="#">KFKF01</a>	7.5	G2	V	4 - 21/22	4	-	S	Molecular Driving Forces 2: Interactions and Dynamics		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>				4
<a href="#">EMEN25</a>	7.5	A	V	4 - 21/22	4	X	E1	Nano Mechanics and Multiscale Modelling	X	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>				4
<a href="#">KFKN05</a>	7.5	A	V	4 - 21/22	4	X	E1	Surface and Colloid Chemistry		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>				4

Course Code	Credits	Cycle	Mand./ Elect.	Year	From year	S.Ex. stud.	Language	Course Name	Footnote	Links					
										sp1	sp2	sp3	sp4		
<a href="#">EXTP95</a>	7.5	A	V	4 - 21/22	4	X	E1	The Physics of Surfaces	X	<a href="#">KS</a>	<a href="#">KE</a>	<a href="#">U</a>	<a href="#">W</a>	<a href="#">T</a>	4

[FMEN25](#) Nano Mechanics and Multiscale Modelling: *The course is offered every other academic year and will be given in 2021/22, 2023/24.*

[EXTP95](#) The Physics of Surfaces: *The course is given by the Faculty of Science and does not follow the study period structure.*

## Specialisation nbm - Nanobiomedicine

Course Code	Credits	Cycle	Mand./ Elect.		Year	From year	S.Ex. stud.	Language	Course Name	Footnote	Links			
											sp1	sp2	sp3	sp4
<a href="#">EEMN21</a>	7.5	A	V		4 - 21/22	4	X	E1	Introduction to Microfluidics and Lab-on-a-chip Systems	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1			
<a href="#">KOKN01</a>	7.5	A	V		4 - 21/22	4	X	E1	Medicinal Chemistry	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1			
<a href="#">EXTN65</a>	15	A	V		4 - 21/22	4	-	E	Neurobiology	X <a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1			
<a href="#">EXTG55</a>	15	G2	V		4 - 21/22	4	-	S	Biochemistry	X <a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2		
<a href="#">KFKN10</a>	7.5	A	V		4 - 21/22	4	X	E1	Biophysical Chemistry	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2		
<a href="#">KBTN01</a>	7.5	A	V		4 - 21/22	4	X	E	Bio Analytical Chemistry	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>			3	
<a href="#">EITN65</a>	7.5	A	V		4 - 21/22	4	X	E1	Measurement and Modeling of the Central Nervous System Function	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>			3	

Course Code	Credits	Cycle	Mand./ Elect.	Year	From year	S.Ex. stud.	Language	Course Name	Footnote	Links				
											sp1	sp2	sp3	sp4
<a href="#">EXTN50</a>	15	A	V	4 - 21/22	4	-	E	Toxicology	X	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>			3	
<a href="#">FFFN20</a>	15	A	V	4 - 21/22	4	X	E	Experimental Biophysics		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>			3	4
<a href="#">EXTG55</a>	15	G2	V	4 - 21/22	4	-	S	Biochemistry	X	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>				4
<a href="#">KIMN01</a>	7.5	A	V	4 - 21/22	4	X	E	Immunotechnology		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>				4
<a href="#">EEMN26</a>	7.5	A	V	4 - 21/22	4	X	E1	Lab-on-a-chip in Biomedical Applications		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>				4
<a href="#">KFKF01</a>	7.5	G2	V	4 - 21/22	4	-	S	Molecular Driving Forces 2: Interactions and Dynamics		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>				4

[EXTN65](#) Neurobiology: *The course is to be studied together with BIOR58, which is given by the Department of Biology. Does not follow the study period structure.*

[EXTG55](#) Biochemistry: *The course is given in English during the autumn semester and in Swedish during the spring semester.*

[EXTN50](#) Toxicology: *The course is to be studied together with BIOR21, which is given by the Department of Biology. Does not follow the study period structure.*

## Specialisation nf - Nanophysics

Course Code	Credits	Cycle	Mand./ Elect.		Year	From year	S.Ex. stud.	Language	Course Name	Footnote	Links			
											sp1	sp2	sp3	sp4
<a href="#">EMEF15</a>	7.5	G2	O		4 - 21/22	4	-	E1	Quantum Mechanics and Mathematical Methods	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1			
<a href="#">FFFN35</a>	7.5	A	O		4 - 21/22	4	X	E	The Physics of Low-dimensional Structures and Quantum Devices	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2		
<a href="#">EMEN01</a>	7.5	A	V		4 - 21/22	4	X	E1	Quantum Mechanics, Advanced Course 1	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1			
<a href="#">FFFN30</a>	7.5	A	V		4 - 21/22	4	X	E1	Semiconductor Physics	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1			
<a href="#">FFFN01</a>	7.5	A	V		4 - 21/22	4	-	E	Advanced Processing of Nanostructures	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1	2		
<a href="#">FAFN15</a>	7.5	A	V		4 - 21/22	4	X	E	Crystal Growth and Semiconductor Epitaxy	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>			3	
<a href="#">FHLA05</a>	7.5	G1	V		4 - 21/22	4	X	E	Engineering Mechanics	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>			3	

Course Code	Credits	Cycle	Mand./ Elect.		Year	From year	S.Ex. stud.	Language	Course Name	Footnote	Links						
											sp1	sp2	sp3	sp4			
<a href="#">FFFN25</a>	7.5	A	V		4 - 21/22	4	X	E	Optoelectronics and Optical Communication		<a href="#">KS</a>	<a href="#">KE</a>	<a href="#">U</a>	<a href="#">W</a>	<a href="#">T</a>	3	
<a href="#">FFFN01</a>	7.5	A	V		4 - 21/22	4	-	E	Advanced Processing of Nanostructures		<a href="#">KS</a>	<a href="#">KE</a>	<a href="#">U</a>	<a href="#">W</a>	<a href="#">T</a>	3	4
<a href="#">FFFN20</a>	15	A	V		4 - 21/22	4	X	E	Experimental Biophysics		<a href="#">KS</a>	<a href="#">KE</a>	<a href="#">U</a>	<a href="#">W</a>	<a href="#">T</a>	3	4
<a href="#">EEMN01</a>	7.5	A	V		4 - 21/22	4	X	E1	Micro Sensors	X	<a href="#">KS</a>	<a href="#">KE</a>	<a href="#">U</a>	<a href="#">W</a>	<a href="#">T</a>		4
<a href="#">FAFN30</a>	7.5	A	V		4 - 21/22	4	X	E	Scanning Probe Microscopy	X	<a href="#">KS</a>	<a href="#">KE</a>	<a href="#">U</a>	<a href="#">W</a>	<a href="#">T</a>		4
<a href="#">EXTP90</a>	7.5	A	V		4 - 21/22	4	X	E	Solid State Theory		<a href="#">KS</a>	<a href="#">KE</a>	<a href="#">U</a>	<a href="#">W</a>	<a href="#">T</a>		4
<a href="#">EXTP95</a>	7.5	A	V		4 - 21/22	4	X	E1	The Physics of Surfaces	X	<a href="#">KS</a>	<a href="#">KE</a>	<a href="#">U</a>	<a href="#">W</a>	<a href="#">T</a>		4

[EEMN01](#) Micro Sensors: *Re-examination set by agreement*

[FAFN30](#) Scanning Probe Microscopy: *The course is offered every other academic year and will be given in 2021/22, 2023/24.*

[EXTP95](#) The Physics of Surfaces: *The course is given by the Faculty of Science and does not follow the study period structure.*

## **Elective Courses - N**

Course Code	Credits	Cycle	Year	From year	S.Ex. stud.	Language	Course Name	Footnote	Links				
										sp1	sp2	sp3	sp4
<a href="#">EMAA60</a>	7.5	G1	1 - 18/19	1	-	S	Introduction to Real Analysis		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1			
<a href="#">EDAA01</a>	7.5	G1	2 - 19/20	2	-	S	Programming - Second Course		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1	2		
<a href="#">EITA05</a>	4.5	G1	2 - 19/20	1	-	S	History of Technology		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>			3	4
<a href="#">EDAA25</a>	3	G1	2 - 19/20	2	X	S	C Programming		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>				4
<a href="#">MIOA12</a>	6	G1	3 - 20/21	3	-	S	Managerial Economics, Basic Course		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1			
<a href="#">EMAF01</a>	7	G2	3 - 20/21	3	-	E1	Mathematics - Analytic Functions		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1			
<a href="#">MIOA12</a>	6	G1	3 - 20/21	3	-	S	Managerial Economics, Basic Course		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2		

Course Code	Credits	Cycle	Year	From year	S.Ex. stud.	Language	Course Name	Footnote	Links					
										sp1	sp2	sp3	sp4	
<a href="#">EMAF05</a>	7	G2	3 - 20/21	3	-	E1	Mathematics - Systems and Transforms		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2			
<a href="#">ESSF01</a>	8	G2	3 - 20/21	3	-	S	Analogue Circuits		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2	3	4	
<a href="#">ERTN55</a>	7.5	A	4 - 21/22	4	X	E	Automatic Control, Advanced Course		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1				
<a href="#">BMEN05</a>	7.5	A	4 - 21/22	4	X	E	Biomechanics		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1				
<a href="#">KLG10</a>	7.5	A	4 - 21/22	4	-	E1	Chemometrics - Design of Experiments and Multivariate Analysis		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1				
<a href="#">IYT000</a>	15	G2	4 - 21/22	3	-	S	Engineering Training Course		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a>	1				
<a href="#">FAFF01</a>	7.5	G2	4 - 21/22	4	X	E	Optics and Optical Design		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1				

Course Code	Credits	Cycle	Year	From year	S.Ex. stud.	Language	Course Name	Footnote	Links				
										sp1	sp2	sp3	sp4
<a href="#">EXTF90</a>	7.5	G2	4 - 21/22	4	X	E	Photon and Neutron Production for Science	X	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1			
<a href="#">MMKN35</a>	7.5	A	4 - 21/22	4	X	E1	Product Innovation		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1			
<a href="#">BMEF10</a>	7.5	G2	4 - 21/22	4	-	S	Transducer Technology		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1			
<a href="#">MAMN20</a>	7.5	A	4 - 21/22	4	X	E1	Aerosol Technology Project		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1	2		
<a href="#">MVKP05</a>	7.5	A	4 - 21/22	4	X	E1	Project - Formula Student		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1	2		
<a href="#">EXTG05</a>	5	G2	4 - 21/22	4	-	E	Biomaterials - Interaction between Living Tissue and Synthetic Materials		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2		
<a href="#">EEMF05</a>	7.5	G2	4 - 21/22	4	X	E1	Biomedical Measurements	X	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2		

Course Code	Credits	Cycle	Year	From year	S.Ex. stud.	Language	Course Name	Footnote	Links				
										sp1	sp2	sp3	sp4
<a href="#">KFKN10</a>	7.5	A	4 - 21/22	4	X	E1	Biophysical Chemistry		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2		
<a href="#">EEMN10</a>	7.5	A	4 - 21/22	4	X	E1	Computerised Measurement Systems		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2		
<a href="#">EDAG01</a>	7.5	G2	4 - 21/22	4	X	S	Efficient C	X	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2		
<a href="#">IYT000</a>	15	G2	4 - 21/22	3	-	S	Engineering Training Course		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a>		2		
<a href="#">EXTN90</a>	7.5	A	4 - 21/22	4	X	E	Experimental Methods and Instrumentation for Synchrotron Radiation Research	X	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2		
<a href="#">EXTQ40</a>	7.5	A	4 - 21/22	4	-	E1	Introduction to Artificial Neural Networks and Deep Learning		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2		
<a href="#">FAFN01</a>	7.5	A	4 - 21/22	4	X	E	Lasers		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2		

Course Code	Credits	Cycle	Year	From year	S.Ex. stud.	Language	Course Name	Footnote	Links				
										sp1	sp2	sp3	sp4
<a href="#">EAFN35</a>	7.5	A	4 - 21/22	4	X	E	Medical Optics		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2		
<a href="#">KOKN05</a>	7.5	A	4 - 21/22	2	X	E1	Organic Chemistry - Theory		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2		
<a href="#">EXTN45</a>	15	A	4 - 21/22	4	-	E1	Pharmacology	X	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2		
<a href="#">EXTN30</a>	15	A	4 - 21/22	4	-	E	Sensory Biology	X	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2		
<a href="#">EMFN25</a>	7.5	A	4 - 21/22	4	X	E	Statistical Mechanics		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2		
<a href="#">BMEN10</a>	7.5	A	4 - 21/22	4	X	E	Tissue Biomechanics		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>		2		
<a href="#">IYT000</a>	15	G2	4 - 21/22	3	-	S	Engineering Training Course		<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a>				3

Course Code	Credits	Cycle	Year	From year	S.Ex. stud.	Language	Course Name	Footnote	Links					
									sp1	sp2	sp3	sp4		
<a href="#">EKMN10</a>	7.5	A	4 - 21/22	4	X	E	High Temperature Materials	X	<a href="#">KS</a>	<a href="#">KE</a>	<a href="#">U</a>	<a href="#">W</a>	<a href="#">T</a>	3
<a href="#">ETIN30</a>	7.5	A	4 - 21/22	4	X	E	Integrated Radio Electronics		<a href="#">KS</a>	<a href="#">KE</a>	<a href="#">U</a>	<a href="#">W</a>	<a href="#">T</a>	3
<a href="#">EXTQ45</a>	7.5	A	4 - 21/22	4	X	E	Modern X-ray Physics - Diffraction and Imaging		<a href="#">KS</a>	<a href="#">KE</a>	<a href="#">U</a>	<a href="#">W</a>	<a href="#">T</a>	3
<a href="#">BMEF20</a>	7.5	G2	4 - 21/22	4	X	E	Neuroengineering		<a href="#">KS</a>	<a href="#">KE</a>	<a href="#">U</a>	<a href="#">T</a>		3
<a href="#">ETIA10</a>	7.5	G1	4 - 21/22	4	X	E	Patent and Intellectual Property Rights		<a href="#">KS</a>	<a href="#">KE</a>	<a href="#">U</a>	<a href="#">W</a>	<a href="#">T</a>	3
<a href="#">EXTN85</a>	7.5	A	4 - 21/22	4	X	E	Scattering Methods	X	<a href="#">KS</a>	<a href="#">KE</a>	<a href="#">U</a>	<a href="#">W</a>	<a href="#">T</a>	3
<a href="#">EXTQ01</a>	7.5	A	4 - 21/22	4	X	E	Theoretical Biophysics	X	<a href="#">KS</a>	<a href="#">KE</a>	<a href="#">U</a>	<a href="#">W</a>	<a href="#">T</a>	3

Course Code	Credits	Cycle	Year	From year	S.Ex. stud.	Language	Course Name	Footnote	Links						
									sp1	sp2	sp3	sp4			
<a href="#">EEMN15</a>	7.5	A	4 - 21/22	4	X	E1	Ultrasound Physics and Technology	X	<a href="#">KS</a>	<a href="#">KE</a>	<a href="#">U</a>	<a href="#">W</a>	<a href="#">T</a>	3	
<a href="#">MAMF16</a>	7.5	G2	4 - 21/22	4	-	S	Work Organization and Management		<a href="#">KS</a>	<a href="#">KE</a>	<a href="#">U</a>	<a href="#">W</a>	<a href="#">T</a>	3	
<a href="#">MAMN20</a>	7.5	A	4 - 21/22	4	X	E1	Aerosol Technology Project		<a href="#">KS</a>	<a href="#">KE</a>	<a href="#">U</a>	<a href="#">W</a>	<a href="#">T</a>	3	4
<a href="#">EDAF50</a>	7.5	G2	4 - 21/22	4	X	S	C++ Programming		<a href="#">KS</a>	<a href="#">KE</a>	<a href="#">U</a>	<a href="#">W</a>	<a href="#">T</a>	3	4
<a href="#">MVKP05</a>	7.5	A	4 - 21/22	4	X	E1	Project - Formula Student		<a href="#">KS</a>	<a href="#">KE</a>	<a href="#">U</a>	<a href="#">W</a>	<a href="#">T</a>	3	4
<a href="#">KASN40</a>	15	A	4 - 21/22	4	X	E1	Project in Pharmaceuticals, Materials or Chemistry		<a href="#">KS</a>	<a href="#">KE</a>	<a href="#">U</a>	<a href="#">T</a>		3	4
<a href="#">EMSF65</a>	7.5	G2	4 - 21/22	4	X	E	Design of Experiments		<a href="#">KS</a>	<a href="#">KE</a>	<a href="#">U</a>	<a href="#">W</a>	<a href="#">T</a>		4

Course Code	Credits	Cycle	Language				Course Name	Footnote	Links	sp1 sp2 sp3 sp4			
			Year	From year	S.Ex. stud.								
<a href="#">IYT000</a>	15	G2	4 - 21/22	3	-	S	Engineering Training Course	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a>				4	
<a href="#">FHLF20</a>	7.5	G2	4 - 21/22	4	X	E	Finite Element Method	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>				4	
<a href="#">EMEN25</a>	7.5	A	4 - 21/22	4	X	E1	Nano Mechanics and Multiscale Modelling	X <a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>				4	
<a href="#">EMNF10</a>	6	G2	4 - 21/22	4	X	E1	Numerical Analysis	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>				4	
<a href="#">EMFN10</a>	7.5	A	4 - 21/22	4	X	E	Quantum Mechanics, Advanced Course 2	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>				4	
<a href="#">EMFN05</a>	7.5	A	4 - 21/22	4	X	E1	Chaos	X <a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	Course on hold				
<a href="#">FKMN05</a>	7.5	A	4 - 21/22	4	X	E	Powder Technology	X <a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	Course on hold				
<a href="#">FAFN40</a>	7.5	A	4 - 21/22	4	X	E	Quantum Information	X <a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	Course on hold				

[EXTF90](#) Photon and Neutron Production for Science: *The course is given by the Faculty of Science and does not follow the study period structure.*

[EEMF05](#) Biomedical Measurements: *Reexam date to be set by agreement.*

[EDAG01](#) Efficient C: [EDAA25](#) and [EDAF15](#) can not be included in the degree at the same time as [EDAG01](#).

[EXTN90](#) Experimental Methods and Instrumentation for Synchrotron Radiation Research: *The course is given by the Faculty of Science and does not follow the study period structure.*

[EXTN45](#) Pharmacology: *The course is to be studied together with BIOR14, which is given by the Department of Biology. Does not follow the study period structure.*

[EXTN30](#) Sensory Biology: *The course is to be studied together with BIOR20, which is given by the Department of Biology. Does not follow the study period structure.*

[FKMN10](#) High Temperature Materials: *The course is offered every other academic year and will be given in 2021/22, 2023/24.*

[EXTN85](#) Scattering Methods: *The course is given by the Faculty of Science and does not follow the study period structure.*

[EXTQ01](#) Theoretical Biophysics: *The course is given by the Faculty of Science and does not follow the study period structure.*

[EEMN15](#) Ultrasound Physics and Technology: *Re-examination set by agreement.*

[FMEN25](#) Nano Mechanics and Multiscale Modelling: *The course is offered every other academic year and will be given in 2021/22, 2023/24.*

[FMFN05](#) Chaos: *The course is offered every other academic year and will next be offered in 2022/23.*

[FKMN05](#) Powder Technology: *The course is offered every other academic year and will be given in 2022/23.*

[FAFN40](#) Quantum Information: *The course is offered every other academic year and will next be offered in 2022/23.*

## **Externally Elective Courses - N**

Course Code	Credits	Cycle	Year	From year	S.Ex. stud.	Language	Course Name	Footnote	Links				
										sp1	sp2	sp3	sp4
<a href="#">GEMA20</a>	7.5	G1	2 - 19/20	1	-	E	English for Engineers	X	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1	2		
<a href="#">GEMA25</a>	7.5	G1	2 - 19/20	1	-	S	German for Engineers	X	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1	2		
<a href="#">GEMA70</a>	15	G1	2 - 19/20	1	-	S	Japanese for Engineers	X	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>	1	2		
<a href="#">GEMA65</a>	7.5	G1	2 - 19/20	1	-	S	Chinese for Engineers	X	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>			3	4
<a href="#">GEMA20</a>	7.5	G1	2 - 19/20	1	-	E	English for Engineers	X	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>			3	4
<a href="#">GEMA01</a>	7.5	G1	2 - 19/20	1	-	S	French for Engineers: Language, Culture and Society, First Course	X	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a> <a href="#">T</a>			3	4

[GEMA20](#) English for Engineers: *LTH common courses (courses where the course code begins with GEM) counts as external elective courses in the degree requirements for students admitted autumn 2011 and later.*

[GEMA25](#) German for Engineers: *LTH common courses (courses where the course code begins with GEM) counts as external elective courses in the degree requirements for students admitted autumn 2011 and later.*

[GEMA70](#) Japanese for Engineers: *LTH common courses (courses where the course code begins with GEM) counts as external elective courses in the degree requirements for students admitted autumn 2011 and later.*

[GEMA65](#) Chinese for Engineers: *LTH common courses (courses where the course code begins with GEM) counts as external elective courses in the degree requirements for students admitted autumn 2011 and later.*

[GEMA01](#) French for Engineers: Language, Culture and Society, First Course: *LTH common courses (courses where the course code begins with GEM) counts as external elective courses in the degree requirements for students admitted autumn 2011 and later.*

## Bachelor's Projects - N

The list contains the bachelor's projects that are included in the N programme.

### Links

Course Code	Credits	Course Name	Links
MAML10	15	Bachelor Project in Aerosol Technology	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a>
KBKL01	15	Bachelor Project in Applied Biochemistry	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a>
KMBL01	15	Bachelor Project in Applied Microbiology	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a>
BMEL01	15	Bachelor Project in Biomedical Engineering	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a>
KFKL01	15	Bachelor Project in Biophysical Chemistry	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a>
KBTL01	15	Bachelor Project in Biotechnology	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a>
KETL01	15	Bachelor Project in Chemical Engineering	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a>
EITL01	15	Bachelor Project in Electrical and Information Technology	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a>
EEML01	15	Bachelor Project in Electrical Measurements	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a>
MVKL01	15	Bachelor Project in Energy Sciences	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a>
FKML01	15	Bachelor Project in Engineering Materials	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a>
KLTL01	15	Bachelor Project in Food Engineering	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a>
KLTL02	15	Bachelor Project in Food Technology	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a>
KIML01	15	Bachelor Project in Immunotechnology	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a> <a href="#">W</a>
KOOL01	15	Bachelor Project in Materials Chemistry	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a>
KOKL01	15	Bachelor Project in Organic Chemistry	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a>
KLGL01	15	Bachelor Project in Pharmaceutical Technology	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a>
PHYL01	15	Bachelor Project in Physics	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a>
KPOL01	15	Bachelor Project in Polymer Technology	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a>
KAKL01	15	Bachelor Project in Technical Analytical Chemistry	<a href="#">KS</a> <a href="#">KE</a> <a href="#">U</a>