

AT PROGRAMME 2024-2025

The B1 programme has a study load of 60 EC and consists of 4 modules, with the study units defined below:

Module	Name	Course code	Study units	EC
1	Mechanics	202001212	Calculus 1	4.0
		202000611	Mechanics	4.5
		202300117	Laboratory Practice	2.0
		202300118	Error analysis & programming skills	1.5
		202000613	Project Mechanics	3.0
2	Thermodynamics	202200179	Calculus 2	4.0
		202200185	Thermodynamics	4.0
		202300117	Laboratory Practice	1.5
		202300118	Error analysis & programming skills	1.5
		202000617	Project Thermodynamics	4.0
3	Fundamentals of Materials	202200189	Vector Calculus	2.0
		202200188	Structure and Properties of Materials	3.0
		202000620	Quantum Matter	3.0
		202000621	Organic Chemistry	3.0
		202200193	Materials Project	4.0
4	Dynamics	202001208	Linear Algebra	3.0
		202000623	Dynamical Systems*	4.0
		202000624	Basic Electronics and Instrumentation	4.0
		202000625	Project Accelerometer	4.0
	Total B1			60

*Dynamical systems 20200623 (M4) is an entry requirement for Models 202000628 (M5) and Project 202000693 (M5)

For students of cohorts 2019 and before, transitional arrangements (as referred to in Article 6) are in effect.

The B2 programme has a study load of 60 EC. The second module of the second year (module 6) consists of a one out of four choice. The choices 6a, 6b and 6c each consist of 15 EC. Choice 6d has a different structure. AT students cannot do the entire Software Systems module as there is overlap in the Mathematics part. Therefore, AT students take a reduced version of the module (12 EC) and take an elective instead.

The modules of the B2 programme with the study units defined below are:

Module	Name	Course code	Content / Study units	EC	
5	Signals, Models and Systems	202000627	Signals	4.0	
		202000628	Models**	4.0	
		202000693	Project SMS**	3.0	
		elective 1 of 4			
		202000695	Engineering Solid Mechanics	4.0	
		202400546	Computational Thinking	4.0	
		202000694	Classical Mechanics	4.0	
		202000644	Electronics	4.0	
6a	Materials Science and Engineering	202000634	Advanced Materials	3.5	
		202000635	Fundamentals of Solids	3.5	
		202000636	Chemistry and Technology of Materials	4.0	
		elective 1 of 2			
		202000637	Semiconductor Devices	4.0	
		202000638	Physical Chemistry of Interfaces	4.0	

6b	Physical Transport (from B-Chemical Science and Engineering (CSE))	202000737	Physical Transport Phenomena	7.5
		202000738	Project Transport Phenomena	4.0
		202000739	Numerical Methods	3.5
6c	Systems and Control (from B-Electrical Engineering(EE))	202001141	Engineering System Dynamics	5.0
		202001140	Control Engineering	5.0
		202001142	Project S&C	5.0
6d	Software Systems (from B-Technical Computer Science (TCS))	202400356	- Design Theory - Programming Theory - Academic and project skills	4.0
		202400357	- Object-oriented programming	8.0
An option for AT students is to enrol for Software Development (202001064). This module has approximately the same technical content as Software Systems (202400355) but it provides more support and guidance to students with no background in computer programming. Take note: Software Development (202001064) will not provide a student access to all Master programmes e.g. Computer Science				
6d	Software Development	202001064	- 202001065 System Design - 202001066 Programming - 202001194 Calculus 1B for BIT	4.0 8.0 3.0
7	Fields and Waves	202000653	Electro- and Magnetostatics and Dynamics	9.0
		202000654	Project Antenna	3.0
		202000652	Finite Element Methods	3.0
8	Business & Society	202000656	Entrepreneurship and Innovation Management	6.0
		202000657	Data, Statistics and Probability for Engineers	5.0
		202000658	Socio-technical Futures	4.0
	Total B2			60

** Dynamical systems 20200623 (M4) is an entry requirement for Models 202000628 (M5) and Project 202000693 (M5)

For students of cohorts 2018 and before, transitional arrangements (as referred to in Article 6) are in effect.

The B3 programme consists of a compulsory and an elective part and has a study load of 60 EC. The study units of the B3 programme should be chosen in such a way that admission to one of the master's programmes referred to in Article 2 of this appendix is obtained. The admission requirements for a selection of master's programmes are available on the AT website. The selected subjects in the third-year programme require the approval of the examination board. The B3 programme consists of an elective space, a design project, the preparation bachelor assignment, and the bachelor assignment (module 12).

The B3 programme is structured as follows:

Module	Name	Course code	Study Unit	EC
9	Condensed Matter Physics	202000660	Introduction to Solid State Physics	5.0
		202000661	Statistical Physics	5.0
		202000662	Optics	2.5
		202000663	Molecular Structure & Spectroscopy	2.5
10	Free choice – Master preparation			
11	Micro System Design and Realization	202000665	Micro Electro- Mechanical Systems Design	5.0
		202000666	Transducers	3.0
		202000667	Design verification with FEM	3.0
		202000668	Preparation Bachelor Assignment AT	4.0
12	Bachelor assignment	202000670	- Scientific/Design	6.0
			- Communication (report & presentation)	4.5
			- Work process	4.5
	Total B3			60

The programme is responsible for the third-year elective modules in modules 9 and 11. Advanced Technology students can choose these modules in the elective space in their third-year programme. These modules are also open to students from other educational programmes

The modules Fundamentals of Materials (Module 3), Signals Models & Systems (Module 5), Materials Science & Engineering (Module 6a), and Condensed Matter Physics (Module 9) are available to students from other educational programmes as join-in minor modules. The prerequisite knowledge for these modules can be found in the OSIRIS Course Catalogue.