

Master of Science in Physics and Astronomy (v11)

Language of instruction Dutch

Valid in the academic year 2018-2019

CMFYST11.1 General Courses

Full-time standard learning track: Students can choose which of these course units will be taken in the first respectively the second year of study; together with the elective courses, a total of 60 credits is taken in the first and a total of 30 credits in the second year of study.

No.	Course name	Lecturer (dept.)	CRDT	Ref	MT1	MT2	Semester	Contact	Study
1	Quantum Field Theory	Henri Verschelde WE05	6			1		52.5	180
2	Astrophysical Simulations	Maarten Baes WE05	6			1		52.5	180
3	Computational Physics	Jan Ryckebusch WE05	6			1		52.5	180
4	Solid State and Nano Physics	Christophe Detavernier WE04	6			1		52.5	180
5	Subatomic Physics II	Didar Dobur WE05	6			1		52.5	180

CMFYST11.2 Elective Courses

Subscribe to 1 option from the following list. Subject to approval by the faculty.

Full-time standard learning track: Students can choose which of these course units will be taken in the first respectively the second year of study; together with the general courses, a total of 60 credits is taken in the first and a total of 30 credits in the second year of study.

CMFYST11.2.1 Option Research

Subscribe to 60 credit units from the following list. Module 2.1.2. (mobility requirement) is obligatory.

It is legitimate to subscribe to 60 credit units of module 2.1.1. under the condition that one includes at least 2 courses with reference a.

CMFYST11.2.1.1 Minor Research

Subscribe to no less than 30 credit units from the following list.

No.	Course name	Lecturer (dept.)	CRDT	Ref	MT1	MT2	Semester	Contact	Study
1	Physics and Chemistry of Nanostructures [en]	Zeger Hens WE06	6			1		52.5	180
2	Simulations and Modelling for the Nanoscale [en]	Veronique Van Speybroeck TW17	6			1		60	180
3	Radioactivity and Radiation Dosimetry	Klaus Bacher GE38	6			1		52.5	180
4	Symmetry Groups	Freddy Callens WE04	6			1		52.5	180
5	Statistical Physics II [en]	Jan Ryckebusch WE05	6			2		52.5	180
6	Quantum Electrodynamics	Dimitri Van Neck WE05	6			(2) ^d		52.5	180
7	Nuclear Methods in Material Research [en]	Stefaan Cottenier TW08	6			2		52.5	180
8	Many-body Physics	Dimitri Van Neck WE05	6			2		52.5	180
9	Structural Analysis Techniques in Solid State Physics	Jolien Dendooven WE04	6			2		52.5	180
10	Nuclear Instrumentation [en]	Luc Van Hoorebeke WE05	6			1		52.5	180
11	Continuum Mechanics [en]	Geert Verdoolaege TW17	6			2		45	180
12	Plasma Physics [en]	Kristel Crombé TW17	6			1		60	180
13	Plasma Technology and Fusion Technology [en]	Rino Morent TW17	6			2		60	180
14	Nuclear Astrophysics	Natalie Jachowicz WE05	6			2		52.5	180
15	Hadrons and nuclei from a theoretical perspective [en]	Jan Ryckebusch WE05	6			2 ^a		52.5	180
16	Differential Geometry II	Jasson Vindas Diaz WE16	6			1		52.5	180
17	Medical Physics [en]	Klaus Bacher GE38	6			2		52.5	180
18	Introduction to the Dynamics of Atmospheres	Piet Termonia WE05	6			1		52.5	180
19	Capita Selecta Solid-state Physics [en]	Eddy Simoen WE04	6			2		52.5	180

20	Astroparticle Physics [en]	Alessio Porcelli WE05	6		2	52.5	180
21	Optical Spectroscopy of Materials [en]	Dirk Poelman WE04	4		1	37.5	120
22	Capita Selecta Particle Physics [en]	Didar Dobur WE05	6		2	52.5	180
23	Atomic and Molecular Physics [en]	Veronique Van Speybroeck TW17	6		1	52.5	180
24	Observational Techniques in Astronomy [en]	Sébastien Viaene WE05	6		2	52.5	180
25	Cosmology and Galaxy Formation	Sven De Rijcke WE05	6		1	52.5	180
26	History and Philosophy of Sciences: Physics and Astronomy	Johan Braeckman LW01	6		1	52.5	180
27	Magnetism: from Fundamentals to Nanoscale Dynamics [en]	Bartel Van Waeyenberge WE04	6		1	52.5	180
28	Radiative Transfer Simulations in Astrophysics [en]	Peter Camps WE05	6		2	52.5	180
29	Luminescence [en]	Jonas Joos WE04	6		2	52.5	180
30	Computational Materials Physics	Stefaan Cottenier TW08	6		1	60	180
31	Quantum Computing [en]	Frank Verstraete WE05	6		2	52.5	180
32	Quantum Black Holes and Holography	Henri Verschelde WE05	6		2	52.5	180
33	Strongly Correlated Quantum Systems [en]	Jutho Haegeman WE05	6		2	52.5	180
34	Advanced Field Theory [en]	Ben Craps VUB	6	a	1	52	180
35	Electroweak and Strong Force [en]	Alexandre Sevrin VUB	6	a	2	52	180
36	Extensions of the Standard Model [en]	Steven Lowette VUB	6	a	1	52	180
37	Non-linear Dynamics and Chaos [en]	Christian Van den Broeck VUB	6	a	2	52	180
38	Experimental Techniques in Particle Physics [en]	Steven Lowette VUB	6	a	1	52	180
39	Object Oriented Programming (C++) for Physicists [en]	Olivier Devroede VUB	6	a	2	52	180
40	Early Universe Cosmology [en]	Ben Craps VUB	6	a	2	86	180
41	Stellar Systems: Origin, Structure, Evolution [en]	Dany Vanbeveren VUB	6	a	2	52	180
42	General Relativity [en]	Ben Craps VUB	6	a	1	52	180
43	Simulation of physics phenomena and detectors in modern physics [en]	Freya Blekman VUB	6	a	1	52	180

CMFYST11.2.1.2 Mobility

Subscribe to courses with a mobility aspect for at least 10 credit units. This can be accomplished by doing an internship in a research-oriented organisation, or by following courses from another university (including VUB). For further guidance with regard to this mobility requirement please consult the promotor of your Master's Dissertation. An internship that is part of the Master's Dissertation can not be counted as extra credit units, but as mobility units (2 mobility units for one week of internship). An internship that is not directly connected with the Master's Dissertation counts for 2 credit units for one week of internship.

CMFYST11.2.1.3 Elective Courses UGent

Select courses for a total amount of credit units not exceeding 20. These courses can be taken from all UGent programs, from the Ghent University elective courses, and from the courses in the minor research of the Master of Science in physics and astronomy. At most 12 credit units can be taken from courses offered in a Bachelor program.

CMFYST11.2.2 Option Education

Subscribe to 60 credit units from no less than 2 and no more than 3 modules from the following list.

CMFYST11.2.2.1 Minor Education

CMFYST11.2.2.1.1 General Courses

No.	Course name	Lecturer (dept.)	CRDT	Ref	MT1	MT2	Semester	Contact	Study
1	Powerful Learning Environments	Bram De Wever PP06	6			1	40	180	
2	Classroom Management and Reflection	Martin Valcke PP06	6			2	40	180	
3	The Teacher within School and Society	Emmelien Merchie PP06	6			1	40	180	

CMFYST11.2.2.1.2 Teaching Methodology

Subscribe to 12 credit units from the following list. Subject to approval by the faculty. Subscribe to 12 credit units from one discipline.

No.	Course name	Lecturer (dept.)	CRDT	Ref	MT1	MT2	Semester	Contact	Study
1	Teaching Methodology: Mathematics I	Hendrik Van Maldeghem WE01	6		2	3	1	60	180

2	Teaching Methodology: Mathematics II	Hendrik Van Maldeghem WE01	6	2	3	2	60	180
3	Teaching Methodology: Physics I	Philippe Smet WE04	6	2	3	1	60	180
4	Teaching Methodology: Physics II	Stefaan Cottenier TW08	6	2	3	2	60	180
5	Teaching Methodology: Chemistry I	Katrien Strubbe WE06	6	2	3	1	60	180
6	Teaching Methodology: Chemistry II	Katrien Strubbe WE06	6	2	3	2	60	180
7	Teaching Methodology: Biology I	Dominique Adriaens WE11	6	2	3	1	60	180
8	Teaching Methodology: Biology II	Dominique Adriaens WE11	6	2	3	2	60	180
9	Teaching Methodology: Geography I	Nico Van de Weghe WE12	6	2	3	1	60	180
10	Teaching Methodology: Geography II	Nico Van de Weghe WE12	6	2	3	2	60	180
11	Teaching Methodology: Informatics I	Kris Coolsaet WE02	6	2	3	1	60	180
12	Teaching Methodology: Informatics II	Kris Coolsaet WE02	6	2	3	2	60	180

CMFYST11.2.2 Elective Courses Research

Subscribe to no less than 12 credit units from the list 2.1.1.

CMFYST11.2.2.3 Elective Courses UGent

Subscribe to courses for no more than 18 credit units to be chosen from the courses of UGent. (max. 12 credit units bachelor courses)

CMFYST11.2.3 Economics and Business Administration

CMFYST11.2.3.1 Minor Economics and Business Administration

Subscribe to 30 credit units from no less than 1 and no more than 2 modules from the following list.

CMFYST11.2.3.1.1 General Courses

Subscribe to no less than 24 and no more than 30 credit units from the following list, distributed over the first standard learning path as follows: no more than 24 credit units in year 1.

Dare to Venture can be chosen if you have already subscribed to Introduction to Entrepreneurship.

No.	Course name	Lecturer (dept.)	CRDT	Ref	MT1	MT2	Semester	Contact	Study
1	Economics	Stijn Ronsse EB21	5			1		30	150
2	Financial and Cost Price Reporting in Companies	Patricia Everaert EB22	6			1		45	180
3	Introduction to Entrepreneurship [en]	Petra Andries EB23	3			1		15	90
4	Dare to Venture [en]	Johan Verrue EB23	4			2		30	120
5	Business Administration	Mirjam Knockaert EB23	4			2		45	120
6	Business Skills [nl, en]	Mieke Audenaert EB23	4			2		30	120
7	Marketing Management	Maggie Geuens EB23	6			1		45	180
8	Organization Theory	Joris Voets EB25	4			2		45	120
9	Business Cycles and Growth	Freddy Heylen EB21	6			1		60	180
10	Markets and Prices	Dirk Van de gaer EB21	6			1		60	180
11	Financial Markets and Institutions	Rudi Vander Vennet EB21	5			2		45	150
12	Environmental Economics and Policy	Brent Bleys EB21	4			2		45	120
13	Corporate Social Responsibility	Saskia Crucke EB23	3			2		30	90

CMFYST11.2.3.1.2 Elective Courses UGent

Subscribe to courses for no more than 6 credit units to be chosen from the courses of UGent.

CMFYST11.2.3.2 Elective Courses Research

Subscribe to no less than 12 credit units from the list 2.1.1.

CMFYST11.2.3.3 Elective Courses UGent

Subscribe to courses for no more than 18 credit units to be chosen from the courses of UGent. (max. 12 credit units bachelor courses)

CMFYST11.3 Master's Dissertation

No.	Course name	Lecturer (dept.)	CRDT	Ref	MT1	MT2	Semester	Contact	Study
1	Master's Dissertation	N. N.	30		2	4	J	250	900

Teaching languages

When a course is not taught (solely) in the programme's language of instruction, the effectively used languages are indicated in square brackets following the course name, using the following ISO codes:

bg: Bulgarian	de: German	es: Spanish	ja: Japanese	pl: Polish	sh: Croatian/Serbian	zh: Chinese
cs: Czech	el: Greek	fr: French	nl: Dutch	pt: Portuguese	sl: Slovene	
da: Danish	en: English	it: Italian	no: Norwegian	ru: Russian	sv: Swedish	

Semester

Semesters are indicated by their number (1 or 2); semester 3 represents the summer period and J indicates a course spanning semesters 1 and 2. When a capital letter precedes a semester number, the course has multiple offerings. The letter indicates the offering concerned.

When a semester is shown in brackets, the course is not offered this year in the specific offering.

The offering frequency and first year of offering are indicated by the following codes:

a: bi-annually	c: annually, from 2019-2020	f: annually, from 2020-2021	i: annually, from 2021-2022
b: tri-annually	d: bi-annually, from 2019-2020	g: bi-annually, from 2020-2021	j: bi-annually, from 2021-2022
	e: tri-annually, from 2019-2020	h: tri-annually, from 2020-2021	k: tri-annually, from 2021-2022