

## Cycle view of the study programme

B1 Or Th Pr Au Cr

Coordinating institution : UCL

Admission and registration procedures should be carried out with the referring establishment.

Link to the UCLouvain programme: <https://uclouvain.be/prog-2018-nano2mc-lnano202t>

### Preparatory courses and/or prerequisite courses

Depending on the student's previous training, and in agreement with the jury, they may choose, if necessary, courses worth a maximum of 9 credits from the programme of the institutions teaching the specialised master's degree.

#### Compulsory courses (B1 : 30Cr)

NANO0001-1	<i>Seminars on the ethnical and socio-economic aspects of nanotechnology</i>	B1	Q2	15	15	-	3
SMEM0038-1	<i>Final thesis - COLLÉGIALITÉ</i>	B1	TA	-	-	-	27

#### Optional courses (B1 : 30Cr)

In agreement with the jury, chose courses for a total of 30 credits. (B1 : 30Cr)

[...] Depending on the student's previous training and with the agreement of the jury, choose, if necessary, courses for a maximum of 9 credits among the course programme for the institutions organising the complementary masters :

[...] In agreement with the jury, choose specialisation courses from the list below, with at least one from each of the four sections, for a total of 8 to 20 credits:

#### A. Fundamental phenomena

##### Courses organised at the UCL

HULG2105-1	<i>Nanoelectronics</i> (english language) - Vincent BAYOT, Denis FLANDRE, JeanPierre RASKIN	B1	Q1	30	30	-	5
HULG2106-1	<i>Physics of nanostructures</i> (english language) - JeanChristophe CHARLIER, Xavier GONZE, Luc PIRAUX	B1	Q1	37,5	22,5	-	5

##### Courses organised at the ULB

HULG0437-1	<i>Chemistry of interfaces and nanostructures</i> - N...	B1	Q1	36	24	-	5
HULG0438-1	<i>Nanochemistry and nanotechnology</i> (english language) - N...	B1	Q2	24	24	-	4
HULG2079-1	<i>Molecular engines and stochastic processes</i> - N...	B1	Q1	16	24	-	5
HULG2107-1	<i>Nanophysics</i> - Pierre GASPARD, Marc HOU	B1	Q2	24	24	-	5

##### Courses organised at the ULg

CHIM0646-1	<i>Physical chemistry of nanostructures</i> (english language) - AnneSophie DUWEZ	B1	Q1	15	-	-	2
BIOC0724-1	<i>Chemistry of biological macromolecules</i>	B1	Q2	20	-	-	2
ELEN0069-1	<i>Nanoelectronics / Optoelectronics</i> (english language) - Benoît VANDERHEYDEN - [40h Proj.]	B1	Q2	30	-	[+]	5
PHYS3003-1	<i>Physics of functional oxides</i> (english language) - Philippe GHOSEZ	B1	Q1	20	10	-	4

##### Course organised at the UMons

HULG0439-1	<i>Morphogenesis and instability</i> - N...	B1	Q2	30	15	-	4
------------	---	----	----	----	----	---	---

##### Courses organised at the UNamur

HULG0441-1	<i>Advanced theoretical chemistry</i> - N...	B1	Q1	37,5	30	-	6
HULG9309-1	<i>Quantum theory of the organic solid state</i>	B1	Q1	15	-	-	3

# Study programmes 2018-2019

## Faculty of Sciences

### Specialised master in nanotechnology

HULG9310-1	<i>Introduction to relativistic phenomena in chemistry</i>	B1	Q2	15	-	-	<b>3</b>
HULG9311-1	<i>Nanomaterials and applications of solid state physics</i>	B1	Q2	45	15	-	<b>6</b>

#### **B. Nanofabrication, nanomanipulation, nanosynthesis**

##### **Course organised at the UCL**

HULG2108-1	<i>Micro and nanofabrication techniques</i> (english language) - Vincent BAYOT, Denis FLANDRE, Laurent FRANCIS, JeanPierre RASKIN	B1	Q2	30	30	-	<b>5</b>
------------	---	----	----	----	----	---	----------

##### **Courses organised at the ULB**

HULG2115-1	<i>Microfabrication processes</i> - N...	B1	TA	24	12	-	<b>5</b>
HULG2094-1	<i>Biocompatible and nanostructured materials</i> (english language) - N...	B1	Q2	36	24	-	<b>5</b>

##### **Courses organised at the ULg**

CHIM9230-1	<i>Nanomaterials, (electro)synthesis and applications</i> (english language) - Christophe DETREMBLEUR, Christine JÉRÔME	B1	Q1	25	-	-	<b>2</b>
SYST0020-1	<i>Introduction to microsystems and microtechnology</i> (english language) - Tristan GILET, JeanMichel REDOUTÉ - [4h Labo., 20h Proj.]	B1	Q2	24	18	[+]	<b>5</b>
CHIM0072-2	<i>Nanomaterials and divided materials engineering</i> - Benoît HEINRICHS, Stéphanie LAMBERT	B1	Q1	15	15	-	<b>3</b>
PHYS3037-1	<i>Nanofabrication : principles and techniques</i> (english language) - Ngoc Duy NGUYEN, Alejandro SILHANEK	B1	Q2	25	15	-	<b>4</b>

##### **Course organised at the UMONS**

HULG2095-1	<i>Polymer nanocomposite materials</i> - N...	B1	Q2	15	15	-	<b>3</b>
------------	---	----	----	----	----	---	----------

#### **C. Characterization of nanostructures**

##### **Courses organised at the UCL**

HULG0442-1	<i>Advanced transistors</i> (english language) - N...	B1	Q2	30	30	-	<b>5</b>
HULG2096-1	<i>Characterization of materials surface</i> - Yves DUFRÈNE, Christine DUPONT, Éric GAIGNEAUX	B1	Q2	52,5	-	-	<b>5</b>
HULG2097-1	<i>Solid surface analysis and treatment</i> (english language) - N...	B1	Q2	30	15	-	<b>5</b>

##### **Courses organised at the ULB**

HULG0443-1	<i>Surface analysis of materias</i> (english language) - N...	B1	Q2	24	12	-	<b>5</b>
HULG2082-1	<i>Surface physics and surface characterization</i> (english language) - Norbert KRUSE	B1	Q2	24	-	-	<b>3</b>

##### **Courses organised at the ULg**

NANO0002-1	<i>Atomic force microscopy and related techniques</i>	B1	Q1	10	-	-	<b>2</b>
PHYS0982-1	<i>Physics of semiconductors</i> (english language) - Ngoc Duy NGUYEN	B1	Q1	10	5	-	<b>2</b>
CHIM9266-1	<i>Characterization of nanostructures by scanning probe techniques</i> (english language) - AnneSophie DUWEZ	B1	Q1	15	-	-	<b>2</b>
CHIM9231-1	<i>Characterization of Biomaterials</i> (english language) - Virginie BERTRAND, AnneSophie DUWEZ, Gauthier EPPE	B1	Q1	15	15	-	<b>4</b>
PHYS0977-1	<i>Spectroscopy of materials</i> (english language)	B1	Q1	20	10	-	<b>4</b>

##### **Course organised at the UMONS**

HULG2083-1	<i>Local probe microscopy</i> - Roberto LAZZARONI, Philippe LECLÈRE	B1	Q2	15	15	-	<b>3</b>
------------	---	----	----	----	----	---	----------

# Study programmes 2018-2019

## Faculty of Sciences

### Specialised master in nanotechnology

#### Courses organised at the UNamur

HULG2081-1	<i>Electron microscopy, diffraction and EELS</i> - N...	B1	Q1	15	15	-	3
HULG9312-1	<i>Experimental optics of surfaces and nanostructures</i>	B1	Q1	22	-	-	3
HULG9313-1	<i>Microscopy applied to materials chemistry</i> (english language)	B1	Q2	15	-	-	3

#### D. Simulation at the nanoscale

##### Course organised at the UCL

HULG2117-1	<i>Atomistic and nanoscopic simulations</i> - JeanChristophe CHARLIER, Xavier GONZE	B1	Q2	30	30	-	5
------------	--	----	----	----	----	---	---

##### Course organised at the ULg

HULG0479-1	<i>Computational approaches to states of matter</i> - N...	B1	Q1	36	24	-	5
------------	--	----	----	----	----	---	---

#### Courses organised at the ULg

CHIM0090-1	<i>Theory and modeling of hybrid molecular complexes</i>	B1	Q1	15	-	-	3
PHYS0976-1	<i>Quantum modeling of material properties</i> (english language)	B1	Q1	20	10	-	4
PHYS3004-1	<i>Physics of nanomaterials</i> (english language) - JeanYves RATY	B1	Q1	20	10	-	4

#### Course organised at the UMONS

HULG0445-1	<i>Molecular modeling in chemistry</i> - N...	B1	Q2	15	15	-	3
------------	---	----	----	----	----	---	---

#### Course organised at the UNamur

HULG0446-1	<i>Simulation in materials physics</i> - N...	B1	Q1	15	15	-	3
HULG0481-1	<i>Complements of quantum chemistry</i> - N...	B1	Q1	15	-	-	3

[...] In agreement with the jury, chose courses for a total of 10 to 22 credits from the list below:

#### Courses organised at the UCL

HULG2085-1	<i>Nanobiotechnology</i> - N...	B1	Q2	30	-	-	3
HULG0447-1	<i>Special electronic devices</i> (english language) - N...	B1	Q1	30	30	-	5
HULG2111-1	<i>Design of Micro and Nanosystems</i> (english language) - Denis FLANDRE, Laurent FRANCIS, Thomas PARDOEN, JeanPierre RASKIN	B1	Q1	30	30	-	5
HULG2086-1	<i>Macromolecular nanotechnology</i> (english language) - Sophie DEMOUSTIER, JeanFrançois GOHY, Alain JONAS, Bernard NYSTEN	B1	Q2	45	15	-	5
HULG2112-1	<i>Transport phenomena in solids and nanostructures</i> (english language) - JeanChristophe CHARLIER, Xavier GONZE, Luc PIRAUX	B1	Q2	30	30	-	5
HULG2113-1	<i>Lasers and Applications</i> - N...	B1	Q2	45	15	-	6
HULG2090-1	<i>Chemometrics</i> - Bernadette GOVAERTS	B1	Q1	22,5	15	-	3
HULG2104-1	<i>Principles of heterogeneous catalysis</i> - Eric GAIGNEAUX	B1	Q1	52,5	-	-	5
HULG2091-1	<i>Statistical Quality Control</i> - Anne DE FRENNE, Bernadette GOVAERTS	B1	Q1	15	5	-	4

#### Courses organised at the ULB

HULG0482-1	<i>Supramolecular interactions</i> - N...	B1	Q2	24	24	-	5
HULG0449-1	<i>Micro- and nanobiotechnology</i> (english language) - N...	B1	Q2	13	26	-	3
HULG0450-1	<i>(Multi)functional polymers</i> (english language) - N...	B1	Q2	12	24	-	3
HULG0451-1	<i>Molecular engineering applied to the biomedical field</i> - N...	B1	Q1	24	-	-	2

HULG0452-1	<i>Molecular and biomolecular engineering</i> (english language) - N...	B1	Q2	24	12	-	<b>3</b>
HULG2116-1	<i>Micro tech components</i> - N...	B1	TA	24	36	-	<b>5</b>
<b>Courses organised at the ULg</b>							
PHYS0975-1	<i>Introduction to soft matter and complex systems</i> - Nicolas VANDEWALLE	B1	Q1	30	-	-	<b>4</b>
CHIM9217-1	<i>Application of nanotechnology to develop new medicine</i> - Géraldine PIEL	B1		10	-	-	<b>1</b>
MECA0008-1	<i>Microfluidics</i> (english language) - Tristan GILET - [16h Labo., 14h Proj.]	B1	Q2	22	8	[+]	<b>5</b>
PHYS3023-1	<i>Physics of magnetic materials</i> (english language) - Eric BOUSQUET	B1	Q2	20	10	-	<b>4</b>
CHIM0654-1	<i>Molecular devices and molecular machines</i>	B1	Q2	15	-	-	<b>2</b>
CHIM9233-1	<i>Molecular logic</i> (english language) - Françoise REMACLE	B1	Q1	25	-	-	<b>2</b>
CHIM0433-1	<i>Proteomics</i> - Marianne FILLET, Pierre LEPRINCE, Gabriel MAZZUCHELLI	B1	Q2	20	10	-	<b>3</b>
CHIM9216-1	<i>The contribution of electrochemistry to macromolecular chemistry</i>	B1	Q2	10	-	-	<b>1</b>
BIOC0720-1	<i>Structure of biological macromolecules</i> - Paulette CHARLIER - [5h Mon. WS]	B1	Q1	15	20	[+]	<b>4</b>
CHIM0637-3	<i>Chemistry of materials, Inorganic materials</i> (english language)	B1	Q1	20	-	-	<b>2</b>
<b>Courses organised at the UMons</b>							
HULG0453-1	<i>Nanotechnology of the controlled-release formulations</i> - N...	B1	Q2	15	-	-	<b>2</b>
HULG2089-1	<i>Introduction to Nanotechnology</i> - Michel WAUTELET	B1	Q1	15	-	-	<b>2</b>
<b>Course organised at the UNamur</b>							
HULG2084-1	<i>Intermolecular interactions</i> (english language) - N...	B1	Q1	15	-	-	<b>3</b>
HULG9314-1	<i>Nanotechnology</i>	B1	Q2	15	-	-	<b>3</b>