

## Two-Year Master Program (120 ECTS)

Access conditions to the Master ([http://www.ulg.ac.be/cms/c\\_46303/master-en-ingenieur-civil-electricien](http://www.ulg.ac.be/cms/c_46303/master-en-ingenieur-civil-electricien))

### First Year

#### Compulsory courses

SYST0003-1	<i>Linear control systems</i> (english language) - Eric BULLINGER	30	30	-	5
INFO0012-1	<i>Computation structures</i> (english language) - Pierre WOLPER	30	30	-	5
MATH0461-1	<i>Introduction to numerical optimization</i> (english language) - Quentin LOUVEAUX	30	30	-	5
INFO0054-1	<i>Functional programming</i> - Pascal GRIBOMONT	30	30	-	5
ELEC0055-1	<i>Electronic control systems</i> - Paul BLEUS, Christophe GEUZAINÉ	30	30	-	5
INFO0064-1	<i>Embedded Systems</i> - Bernard BOIGELOT	30	30	-	5
ELEN0017-1	<i>Analysis and Design of Telecommunications Systems</i> - Marc VAN DROOGENBROECK	30	30	-	5
ELEN0074-1	<i>Sensors, microsensors and instrumentation</i> - Philippe VANDERBEMDEN	30	30	-	5
ELEN0004-1	<i>The physics of semiconductor devices</i> - Benoît VANDERHEYDEN	30	30	-	5
ELEN0002-1	<i>Introduction to Audio and Video Techniques</i> - JeanJacques EMBRECHTS	30	30	-	5
ELEN0037-1	<i>Microelectronics. Analysis and CAD of integrated circuits</i> - Jacques DESTINÉ	30	30	-	5
ELEN0060-1	<i>Information and Coding Theory</i> - Louis WEHENKEL	30	30	-	5

*Notice* : Students who have, in their BAC studies, have already taken one or more compulsory courses in this Master's programme are obliged to replace them by other courses on list of option courses; this choice must be approved by the President of the cycle's Jury.

### Second year

#### Compulsory courses

ATFE0014-1	<i>Final Work (including an introduction to methodology and research)</i> - COLLÉGIALITÉ	-	-	-	25
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#### Optional courses

[...] Choose one course from the ULg courses'programme ; this choice must be approved by the cycle's Jury president.

#### Choose one of the following focus :

#### Research Focus

#### Optional courses

Choose courses totalling 30 ECTS out of the following :

#### Electricity and electronics

ELEC0017-1	<i>Indirect Effects of Electromagnetic Fields</i> - Véronique BEAUVOIS, JeanLouis LILIEN	30	30	-	5
ELEC0054-1	<i>Application of Electrical Measuring Systems</i> - Philippe VANDERBEMDEN	30	30	-	5
ELEN0018-1	<i>Electroacoustics</i> - JeanJacques EMBRECHTS	30	30	-	5
ELEN0035-1	<i>CAD in (Analogue and Digital) On-Demand Microelectronics</i> - Jacques DESTINÉ	30	30	-	5
ELEN0038-1	<i>Microsystems</i> - Jacques DESTINÉ	30	30	-	5
ELEN0069-1	<i>Nanoelectronics / Optoelectronics</i> - Benoît VANDERHEYDEN	30	30	-	5
GBIO0010-1	<i>Bioinstrumentation</i> - Jacques DESTINÉ	30	30	-	5

#### Software, networks and security

INFO0009-1	<i>Introduction to Data Bases</i> - Pierre WOLPER	30	30	-	5
INFO0010-1	<i>Introduction to computer networking</i> (english language) - Guy LEDUC	30	30	-	5
INFO0045-2	<i>Cryptography and Computer Security</i> - Benoît DONNET	30	30	-	5
MECA0009-1	<i>Introduction to microtechnologies</i> (english language) - Tristan GILET	30	30	-	5

#### Modelling and Applied Mathematics

ELEC0041-1	<i>Modeling and design of electromagnetic systems</i> - Patrick DULAR,	30	30	-	5
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	EUZAINÉ				
ELEN0062-1	<i>Applied Inductive Learning</i> - Pierre GEURTS, Louis WEHENKEL	30	30	-	5
ELEN0442-1	<i>Introduction to statistical training</i> - Pierre GEURTS, Louis WEHENKEL	30	30	-	5
GBIO0009-1	<i>Bioinformatics</i> (english language) - Kristel VAN STEEN	30	30	-	5
GBIO0011-1	<i>Biological systems modeling</i> - Pierre DAUBY, Rodolphe SEPULCHRE	30	30	-	5
INFO0939-1	<i>High performance scientific computing</i> (english language) - Christophe GEUZAINÉ	30	30	-	5
MATH0462-1	<i>Discrete optimization</i> - Quentin LOUVEAUX	30	30	-	5
SYST0017-1	<i>Non linear systems</i> - Rodolphe SEPULCHRE	30	30	-	5
<b>Signals</b>					
ELEN0009-1	<i>Building Acoustics and Noise Control</i> - JeanJacques EMBRECHTS	30	30	-	5
ELEN0016-1	<i>Digital Image Processing</i> - Marc VAN DROOGENBROECK	30	30	-	5
ELEN0019-1	<i>Treatment of the audio signals : principles and experiments</i> - JeanJacques EMBRECHTS	30	30	-	5
ELEN0071-1	<i>Digital Signal Processing</i> - Jacques VERLY	30	30	-	5
ELEN0072-1	<i>Statistical Signal Processing</i> - Jacques VERLY	30	30	-	5
GBIO0008-1	<i>Medical imaging</i> (english language) - Christophe PHILLIPS	30	30	-	5
<b>Energy transmission and electric networks</b>					
ELEC0014-3	<i>Electric Energy Transmission and Distribution</i> - JeanLouis LILIEEN - [2,5d FW]	30	15	[+]	5
ELEC0018-1	<i>Energy market</i> - Damien ERNST, Yvan HELLA	45	15	-	5
ELEC0029-2	<i>Analysis and operation of electric energy systems</i> - Thierry VAN CUTSEM	30	30	-	5
ELEC0039-1	<i>Network Electromechanical Performance</i> - JeanLouis LILIEEN	30	30	-	5
ELEC0047-1	<i>Power systems dynamics, control and stability</i> (english language) - Thierry VAN CUTSEM	30	30	-	5
ELEC0436-1	<i>Energy Management Systems and optimal functions for electric power systems</i> - Patricia ROUSSEAUX	30	30	-	5
<b>Industrial management</b>					
[...]	Industrial management course (to be chosen among courses on offer at the university : the selection must meet with the approval of the president of the jury)				
<b>Placement</b>					
ASTG0019-1	<i>Placement</i> - COLLÉGIALITÉ	-	-	-	10
	<i>Notice</i> : Students who have, in their BAC studies, already taken one or more option courses found in this list must not take them again.				

## Professional focus in management

### Compulsory courses

GEST3001-1	<i>People management and organisation</i> - Jocelyne ROBERT	24	24	-	4
GEST3002-1	<i>Human Resources</i> - Jocelyne ROBERT	24	-	-	2
GEST3003-1	<i>Competitive strategy in the marketplace</i> (english language) - Michael GHILISSEN	16	16	-	3
GEST3004-1	<i>Marketing (operations and management)</i> (english language) - Michael GHILISSEN	16	16	-	3
GEST3005-2	<i>Accountancy and Finance</i> - Jacques BERWART	24	24	-	4
GEST3006-1	<i>Operations and supply chain management I</i> (english language) - Yasemin ARDA	16	16	-	3
GSTG3001-1	<i>Business plan</i> - COLLÉGIALITÉ	-	30	-	4
GSTG3002-1	<i>Functional analysis of a company</i> - COLLÉGIALITÉ - [30h Internship]	-	-	[+]	4

### Optional courses

Choose one of the following courses :

GEST3010-1	<i>Operations and supply chain management II</i> - Sabine LIMBOURG	16	16	-	3
GEST3011-2	<i>ICT for Business</i> - Alain DUBOIS	16	16	-	3
GEST3012-1	<i>Financial and actuarial modelling</i> - Louis ESCH	16	16	-	3

## Professional focus in sustainable car technologies

### Compulsory courses

#### Module 1 : Vehicle dynamics and safety

MECA0492-2	<i>Vehicle dynamics</i> (english language) - Pierre DUYSINX	30	20	-	4
MECA0493-2	<i>Vehicle aerodynamics</i> (english language) - Grigorios DIMITRIADIS	15	10	-	2
MECA0494-3	<i>Driveline and braking systems</i> (english language) - JeanLuc BOZET, Olivier BRULS,	30	20	-	4

	Pierre DUYSINX				
MECA0495-1	<i>Introduction to vehicle safety</i> (english language) - Pierre DUYSINX, Ludovic NOELS	15	10	-	2
MECA0496-2	<i>Materials for automotive applications</i> (english language) - Jacqueline LECOMTEBECKERS, Ahmed RASSILI	30	20	-	4
<b>Module 2 : Engine and electric propulsion systems</b>					
MECA0497-2	<i>Vehicle performance</i> (english language) - Pierre DUYSINX	15	10	-	2
MECA0498-2	<i>Internal combustion engines</i> (english language) - Philippe NGENDAKUMANA	30	20	-	4
MECA0499-2	<i>Electric traction motors</i> (english language) - Johan GYSELINCK	15	10	-	2
MECA0500-2	<i>Hybrid electric and fuel cell vehicles</i> (english language) - Pierre DUYSINX, Nathalie JOB	30	20	-	4
MECA0501-1	<i>Thermal and Electrical Management of vehicles</i> (english language) - Vincent LEMORT	15	10	-	2

### Adjusted programme for student of the Bachelors in Civil Engineering who have not taken the "Electricity and electronics"

#### Students studying for the Bachelors in Civil Engineering who have not chosen the appropriate option :

- \* must take all the so-called "prerequisite" courses hereafter, if they were not taken during the 1st cycle. These courses must be taken during the 1st year of the masters and some 1st-year compulsory courses must be rolled over to the 2nd year.
- \* must subsequently reduce the number of courses they choose to take in the 2nd year of the masters. If all the "prerequisite" courses must be taken, it will be impossible for them to choose which courses they take.
- \* cannot choose the professional "management" focus.

The adapted programme for these students must first gain be approved by the Jury.

#### Compulsory prerequisites

ELEC0431-1	<i>Electromagnetic energy transformation</i> - Christophe GEUZAINÉ	30	30	-	5
ELEC0052-1	<i>Analysis and Design of Electrical Measuring Systems</i> - Philippe VANDERBEMDEN	30	30	-	5
ELEC0053-2	<i>Electric circuits</i> - Patricia ROUSSEAU	30	30	-	5
ELEN0008-1	<i>Principles of analog and digital telecommunications systems</i> - Marc VAN DROOGENBROECK	30	30	-	5
ELEN0040-1	<i>Digital Electronics</i> - Jacques DESTINÉ	30	30	-	5
ELEN0070-1	<i>Signal Processing</i> - Jacques VERLY	30	30	-	5
ELEN0075-1	(pas organisé en 2012-2013) <i>Analog Electronics</i> - Benoît VANDERHEYDEN	30	30	-	5
ELEN0076-1	<i>Electromagnetism</i> - Patricia ROUSSEAU, Benoît VANDERHEYDEN	30	30	-	5