

## Two-Year Master Program (120 ECTS)

### First Year

#### Compulsory courses

AERO0001-1	<i>Aerodynamics, 30h Th, 30h Exc</i> - Jean-André ESSERS, Vincent TERRAPON	30	30	-	5
MECA0474-1	<i>CAD in mechanical engineering</i> - Eric BÉCHET, Eric BÉCHET	30	30	-	5
MECA0031-2	<i>Kinematics and Dynamics of Mechanisms</i> - Olivier BRULS	30	30	-	5
MECA0023-1	<i>Inelastic behavior of solids</i> - Jean-Philippe PONTHOT	30	30	-	5
MECA0025-1	<i>Fluid Mechanics</i> - Eric DELHEZ	30	30	-	5
AERO0023-1	<i>Aircraft design</i> - Grigorios DIMITRIADIS, Ludovic NOELS	30	30	-	5
AERO0003-1	<i>Flight mechanics and airplane performance</i> - Grigorios DIMITRIADIS	30	30	-	5
AERO0025-1	<i>Creation of satellite</i> - Gaëtan KERSCHEN	30	30	-	5
APRI0004-1	<i>Unified project in aerospace</i> - Ludovic NOELS - [5d FW]	-	60	[+]	5
AERO0014-1	<i>Aeronautic and Space Propulsion</i> - Olivier LÉONARD	30	30	-	5
MECA0462-2	<i>Materials selection</i> - Jacqueline LECOMTE#BECKERS - [1d FW]	30	30	[+]	5
MECA0029-1	<i>Mechanical Vibrations</i> - Jean-Claude GOLINVAL	30	30	-	5

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

### Second year

#### Compulsory courses

ATFE0005-1	<i>Final work (including an internship or a placement in a company or in a research centre under the supervision of the teacher responsible for the final work and including an introduction to research methodology)</i> - COLLÉGIALITÉ	-	-	-	25
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#### Optional courses

Choose one of the following courses :

- [...] the courses of the University of Liege
- [...] the short list below.

ECON0207-1	<i>Industrial Economics</i> - Axel GAUTIER	30	15	-	5
LOGI0011-1	<i>Supply Chain Management (english language)</i> - Sabine LIMBOURG	45	-	-	5
LANG1957-1	<i>Dutch Engineering (dutch language)</i> - Claudine COLIN	60	-	-	5
LANG1958-1	<i>German Engineering (german language)</i> - Françoise CARL	60	-	-	5

In any case, this course must have the approval of the cycle's Jury President.

#### Choose one of the following focus :

#### Research Focus

##### Compulsory courses

MECA0027-1	<i>Structure Optimization</i> - Claude FLEURY - Suppl : Pierre DUYSINX	30	30	-	5
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##### Optional courses

Students choose courses totaling 25 ECTS from the optional courses list. With the approval of the Jury's President, students can select 5 ECTS from the courses list of other Masters of the Faculty of Applied Sciences.

##### Aeronautical Technologies

AERO0021-1	<i>Experimental Aerodynamics</i> - Grigorios DIMITRIADIS	30	30	-	5
AERO0016-1	<i>Aeroelasticity and fluid interactions - structure</i> - Grigorios DIMITRIADIS	30	30	-	5
AERO0015-1	<i>Mechanical Design of Turbomachinery</i> - Jean-Claude GOLINVAL	30	30	-	5

MECA0502-1	<i>Mechanics of composites</i> - Claude FLEURY - Suppl : Michaël BRUYNEEL	30	30	-	5
MECA0032-1	<i>Flow in Turbomachines</i> - Olivier LÉONARD	30	30	-	5
MECA0464-1	<i>Large deformation of solids</i> - Jean-Philippe PONTHOT	30	30	-	5
MECA0058-1	<i>Fracture mechanics, damage and fatigue</i> - Ludovic NOELS	30	30	-	5
MECA0028-1	<i>Aeronautical Structures</i> - Ludovic NOELS	30	30	-	5
MECA0127-1	<i>Active Structures</i> - André PREUMONT	30	30	-	5
<b>Space Technology</b>					
ASTR0004-2	<i>Astrophysics and Space Techniques</i> - Jean SURDEJ - [5d Peda. Tr.]	30	15	[+]	5
AERO0024-1	<i>Aerodynamics</i> - Gaëtan KERSCHEN	30	30	-	5
AERO0026-1	<i>Launch vehicles design and propulsion</i> - Jean-Luc BOZET, Philippe NGENDAKUMANA	30	-	-	5
AERO0018-3	<i>Space Experiment Development</i> - Pierre ROCHUS	30	30	-	5
ELEN0008-1	<i>Principles of analog and digital telecommunications systems</i> - Marc VAN DROOGENBROECK	30	30	-	5
AERO0027-2	<i>Deployable structures</i> - Olivier BRULS	30	30	-	5
SPAT0032-2	<i>Teledetection</i> - Christian BARBIER	30	30	-	5
<b>Other optional courses</b>					
MATH0024-1	<i>Further Study of Digital Analysis (Equations with Partial Derivatives)</i> - Jean-André ESSERS	30	30	-	5
MECA0062-1	<i>Vibration Testing and Experimental Modal Analysis</i> - Jean-Claude GOLINVAL	30	30	-	5
INFO0939-1	<i>High performance scientific computing (english language)</i> - Christophe GEUZAINÉ	30	30	-	5
MECA0465-1	<i>Model strength and structural integrity of components</i> - Gaëtan KERSCHEN	30	30	-	5
INFO2046-1	<i>Computational Geometry</i> - Eric BÉCHET	30	30	-	5
[...]	Choose one course from the course's programme of other master of the Faculty of Applied Sciences (with the approval of the cycle's Jusry president)				

Notice : 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> - Michael GHILISSEN	16	16	-	3
GEST3004-1	<i>Marketing (operations and management)</i> - 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> - Yasemin ARDA - Suppl : Robert NONDONFAZ	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

### Adjusted programme for student of the Bachelors in Civil Engineering who have not taken the "Mechanics" or "Physics" option

#### 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

MECA0036-1	<i>Finite Element Method</i> - Jean-Philippe PONTHOT	30	30	-	5
MECA0155-1	<i>Dynamics of Mechanical Systems</i> - Jean-Claude GOLINVAL	30	30	-	5
MECA0012-5	<i>Mechanics of materials I</i> - Jean-Pierre JASPART	30	30	-	5
MECA0002-1	<i>Applied Thermodynamics and Introduction to Heat Engines</i> - Olivier LÉONARD	30	30	-	5
MECA0445-1	<i>Transfers of heat and matter</i> - Michel HOGGE	30	30	-	5
PHYS2026-1	<i>Physics 4 : Microscopic physics (partime a : waves optics, partime b : introduction to nuclear physics)</i> - Ngoc Duy NGUYEN	30	30	-	5

#### Adjusted programme for bachelors in Physical Sciences

This programme is defined in relation with the BAC in physical sciences organised by the University of Liège's Faculty of Sciences.

It is likely to be greatly modified for students with a BAC in physical sciences from other institutions, in terms of the knowledge gained, and courses not taken, and the personal project, whilst remaining within the limits of 75+60 credits.

#### First Year

##### Compulsory courses

MECA0001-1	<i>Solid mechanics</i> - Serge CESCOTTO - Suppl : Anne HABRAKEN	30	30	-	5
SYST0002-1	<i>Linear systems</i> - Rodolphe SEPULCHRE	30	30	-	5
MECA0012-5	<i>Mechanics of materials I</i> - Jean-Pierre JASPART	30	30	-	5
MECA0445-1	<i>Transfers of heat and matter</i> - Michel HOGGE	30	30	-	5
MECA0155-1	<i>Dynamics of Mechanical Systems</i> - Jean-Claude GOLINVAL	30	30	-	5
MECA0036-1	<i>Finite Element Method</i> - Jean-Philippe PONTHOT	30	30	-	5
MECA0474-1	<i>CAD in mechanical engineering</i> - Eric BÉCHET, Eric BÉCHET	30	30	-	5
MECA0031-2	<i>Kinematics and Dynamics of Mechanisms</i> - Olivier BRULS	30	30	-	5
MECA0025-1	<i>Fluid Mechanics</i> - Eric DELHEZ	30	30	-	5
AERO0003-1	<i>Flight mechanics and airplane performance</i> - Grigorios DIMITRIADIS	30	30	-	5
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AERO0023-1	<i>Aircraft design</i> - Grigorios DIMITRIADIS, Ludovic NOELS	30	30	-	5
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##### Optional courses

[...] Choose one course from the ULg courses' programme. In any case, this course must have the approval of the cycle's Jury President.

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#### Research Focus

##### Compulsory courses

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AERO0014-1	<i>Aeronautic and Space Propulsion</i> - Olivier LÉONARD	30	30	-	5
MECA0023-1	<i>Inelastic behavior of solids</i> - Jean-Philippe PONTHOT	30	30	-	5

AERO0001-1 *Aerodynamics, 30h Th, 30h Exc* - Jean-André ESSERS, Vincent TERRAPON

30 30 - 5

**Optional courses**

[...] 2 courses to choose from options of regular program of the 2nd Master