Building your programme in the MAP Master

September 2023

Number of credits

- Master = 120 credits
- Principle: 60 credits / year

__Taking more than 60 credits__ (be careful)
- Automatically approved if at most 65
- Requires an authorization from 66 to 75
- > 75 forbidden

__Taking less than 60 credits__
- Last year, when finalizing the master
- To balance master if there remains less than 120 credit
  (Automatically approved if remains between 66 and 119 credits over 2 years)
- Due to impossibility of taking master thesis (see later)

Rule 1 : Six Mandatory courses

- LINMA 2171: Numerical analysis: approximation…
- LINMA 2370: Modelling and analysis of dyn. Sys
- LINMA 2380: Matrix Computations
- LINMA 2470: Stochastic Modelling
- LINMA 2471: Optimization models and methods
- LINMA 2710: Scientific computing

5 credits each → 30 credits

Rule 2: Core Competences

At least 20 credits among core options

1) Optimization and Operation Research
2) Systems and Control engineering
3) Computational engineering

Rule 3 Professional Exposure

LEPL2020 prof. Integration work (2 ECTS) **compulsory**. Recorded in M2, but activities starting in M1

(default rule: recorded the same year as your master thesis)

At least 3 credits among

- Course in the « business risks and opp. option »

- ineo* (pre-selection required)

- Prof focus course, including
  - LFSA2995 Internship
  - LINMA2120 Applied Mathematics Seminar
  - LINMA2360 Project in Math Engineering
  - LFSA2212 Innovation classes
  - … (see list in programme https://uclouvain.be/en-prog-2022-map2m-programme)

Project in Mathematical Engineering

Practical engineering application

Topics proposed by **industrial** partner

Monthly meetings

Groups of 2-3 students

One **report** and **presentation** (end Q2)

Presentation of **topics**:

      Thu. 21 September
      Barb 21
      2 PM

Optimizing an electrical network

Designing optimal robust mechanical structures

Optimal delivery service design

LINMA2360 Project examples

Instance segmentation

Organizing a tennis tournament

Scheduling all 'EPL' lectures

Rule 4: Master thesis

- 25 credits

- Selection process in the spring

- Some topics by groups of two, including with students of other degrees.

Remaining 40 credits

To be chosen among

a) Options of the MAP master

b) Other elective courses: disciplinary (see list*)

c) Other elective courses: non-disciplinary

d) Languages – group dynamics etc.

At least 90 ECTS of disciplinary topics in total
(i.e. at least 15 in a-b out of 40 remaining; professional exposure indeed doesn't count as disciplinary)

* Courses out of the recommended are judged on case-by case basis. EPL courses have typically been accepted as elective « disciplinary » course in the MAP master provided the student programme is consistent and they are sufficiently technical.

Major / Options

- 9 Options / majors, some with specific rules

- Option can be « validated » on your diploma under some conditions
(e.g. taking at least 15 / 20 credits in the option)

- Not compulsory to validate any option

- Courses appearing in two options only count towards one of them.

List of Major / Options

1) Optimization and Operation Research Engineering
2) Systems and Control Engineering
3) Computational Engineering

4) Data Science
5) Financial Mathematics
6) Cryptography and Information Security
7) Biomedical Engineering

8) Small and Medium Sized business creation (FR - ineo*)
9) Business risk and opportunities (FR - not compatible with 8)

Modules and specific access to other masters

- *Master in Actuarial sciences:*
  Every course in financial mathematic option and extension (41 credits) counts towards the master

- *Master in Biostatistics and Technometry*:
  30 credits followed → master possible in one year

- *Master in general statistics and mathematics*:
  30 credits followed → master possible in one year

Language courses

- At most 8 credits count towards the Master

- Any relevant language course,
  but see list of 6 recommended courses

- Additional courses can be taken (pending acceptation and possible ILV rules), but do not count towards master.

On « other non-disciplinary topics »

- At most 8 credits (on top of the non-disciplinary courses that fit in other boxes) count towards the Master.

- Always write a short motivation for these courses

- Courses may be refused if
  - Intersection with a class already followed too strong
    e.g. Economie politique
  - Class too easy given your background
    e.g. introductory class to mathematical topic in non-technically oriented school.

- Certain schools have constraints about who can take their classes, or refuse out-of-school students. Please verify these constraints.

Advice and reminders

- _Rules apply:_ The programme and rules were recently updated after a detailed reflexion. Exceptions are sometimes possible, but by default rules apply.

- You are responsible for your programme. Putting yourself in a difficult situation **is not a valid reason for a derogation.**

- _Keep some flexbility for the second year:_ to take classes related to master thesis, or on topics you will discover.

➔ **_Make prospective plan for whole master_**

Advice and reminders

- **Recommendation:** Take all mandatory courses and 20 credits in options 1-2-3 during the first year.

+ If internship: best period is Summer between master 1 and master 2 (do prepare this in advance!)

→Flexibility in second year, important for
- Master thesis related classes
- Topics discovered during first year
- Mobility!

Dual degrees

Specific rules apply for dual degrees (including about compulsory courses, optional courses etc.)

- Check the rules on moodle!
- 2 degrees → less flexibility
- Derogation need approval by both institutions
    → more complex process

Remaining Bachelor classes

- **_New law:_** students who have not graduated for bachelor not allowed to start their master thesis.
- **_At EPL:_** not allowed to take part to thesis selection process in the spring.

Extreme example:

In september 2023, X has passed all classes except 1 bachelor class (exam in june) and the master thesis.

→No master thesis selection before summer 2024

→Earliest graduation : January 2025

→Potentially only one class in 23-24

Remaining Bachelor classes

- ***New law:*** students who have not graduated for bachelor not allowed to start their master thesis.

- ***At EPL:*** not allowed to take part to thesis selection process in the spring.

➔ Passing the remaining bachelor classes should be the ***absolute priority.***

Remaining Bachelor classes

- If your main registration is in the bachelor*, special rules apply, → no need to fill the excel file. Strongly advised that anticipated classes should be compulsory classes from the master.

- If your main registration is in the master
  - Bachelor classes must be declared in your program
  - They count towards number of credit per year but not towards master
  - Advice: be realistic: If you have validated 55 credits each year, it may be unwise to register 75 credits in M1

* Typically: There remains more than 15 credits in Bachelor

Prerequisite and Bachelor Classes

The MAP master programme assumes you followed the 6 courses of the MAP orientation in Bachelor, or similar classes

Default rule otherwise: take missing classes in master

But, exceptions possible (contact me),

- E.g. class in french which you don't speak,
  or class on related topic followed in bachelor

- Be aware of the pre-requisites of the classes in the master

- You may be required to take a class on a similar topic in the master

MAP Moodle

- https://moodle.uclouvain.be/course/view.php?id=1223

- **Info on programme**

- **Register!**

- **Questions / more information:**
  - Check *the FAQs' on moodle*
  - If no solution found, contact responsable-map@uclouvain.be

Registering your programme

Spreadsheet (available on moodle):

- register for class on EPC **and** via excel file
- Send excel file to secretariat-pae-map-data@uclouvain.be

You are responsible for making sure that EPC and the excel file match!

- Include prospective plan for second year on excel file (not EPC)
- Automatic verification → **do not send a file with remaining alerts** (except bug, special situations etc., which you document)
- Some special situations not taken into account yet
  → do your best and add comments
- Contact me if there is a (real) bug

How to fill the excel file? (1)

Fill this information, and mention if this is your final year

Nom:	
NOMA	
Date:	
Final Year? y/n	
	please answer y or n above
	Instruction at the end. Please fill for the whole master
	Do not modify the gray cells!

How to fill the excel file? (2)

If this is not your final year

- Y1: courses of this (fill cell with number of credits)
- Y2: courses envisioned for next year (can be modified next year)
- Anticipation: courses already credited in your master
  (e.g. in Bachelor, or last year if you take more than 2 years)
- Disp: Courses that you do not need to take because you have had an equivalent class in the past. do not count towards the 120 ECTS

	MS 21		MS 22		Disp	Anticipation	Year 1		Year 2	
	Q1	Q2	Q1	Q2			Q1	Q2	Q1	Q2
Interpolation, Integration	5		5							
systems	5		5							
	5		5							
		5		5						
	5		5							
		5		5						

How to fill the excel file? (3)

If this is your final year

- Y1: courses credited last year
- Y2: courses taken this year
- Anticipation: courses credited prior to last year
- Disp: Courses that you do not need to take because you have had an equivalent class in the past. do not count towards the 120 ECTS

	MS 21		MS 22		Disp	Anticipation	Year 1		Year 2	
	Q1	Q2	Q1	Q2			Q1	Q2	Q1	Q2
Interpolation, Integration	5		5							
systems	5		5							
	5		5							
		5		5						
	5		5							
		5		5						

First → Second year

- A course selected in M1 but not credited does not necessarily need to be re-selected in M2

- Prospective plan made in M1 for M2 can be completely modified when arriving in M2

Mobility: for next year

If you plan to go on erasmus next year, use « erasmus place holder » for 30 credits in excel file for the corresponding semester

Erasmus - mobility placeholder Q1			30							
Erasmus - mobility placeholder Q2				30						

Mobility: for this year

- Add classes in « other elective disciplinary courses »

Other elective disciplinary courses (including mobility)				Subtotal:			0				

- Do not use the place holder

- Classes in erasmus cannot replace compulsory classes or count towards the 20 ECTS in options 1-2-3 *(extremely rare exceptions)*

Dual Degrees: ignore the warnings and mention it in the comments

In Case of Error (red message)

Errors summary	Less than 90 disciplinary credits; Insufficient number of credits in first three majors; LEPL2020 is required; Insufficient professional exposure credits;											
		MS 21		MS 22		Disp	Anticipation	Year 1		Year 2		
		Q1	Q2	Q1	Q2			Q1	Q2	Q1	Q2	
Master - Mandatory courses												Remarks
LINMA2171	Numerical Analysis : Approximation, Interpolation, Integration	5		5								this class is required
LINMA2370	Modelling and analysis of dynamical systems	5		5								this class is required
LINMA2380	Matrix computations	5		5								this class is required
LINMA2470	Stochastic modelling		5		5							this class is required
LINMA2471	Optimization models and methods II	5		5								this class is required
LINMA2710	Scientific computing		5		5							this class is required
LINMA2990	Master thesis (*distribute 25 credits on Q1 & Q2*)				25							Master Thesis Required (Q1 &/or Q2)
	Total in the first three majors must be at least 20					Total 1 + 2 + 3	0					Insufficient number of credits in first three majors;

- Check first the rules of the master
- If you think there is a real bug, please contact me
- If the error is justified by a very special situation, describe it in "free comments"

Free comments by Students

Programs with errors and without comments will automatically be rejected

Deadlines

- Normal registrations: 2/10

- Exceptions (in addition to normal reg.): *2/10*
    - **send request to Ms Gihoul aurelie.gihoul@uclouvain.be**
    - *cc responsable-map@uclouvain.be*
    - *Do also submit the excel file by the 29th with a comment about the request*

- New program if program rejected 13/10

- Modif for second semester (constant credit): xxfeb.