

#### Block view of the study programme

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#### Block 1

Depending on your educational background or depending on the focus, it is possible that the prerequisites / corequisites for the 1st year of the programme are presented in the block 2. You are therefore invited to read through the list of courses in block 2 even if you are registering for the first time in this master.

Within the framework of their Master in Civil Engineering, all students must follow or validate the 90 credits of joint training (including placement and final year dissertation) and 30 credits from one of the two professional focuses, i.e. 'civil engineering' or 'urban and environmental engineering'.

Ideally, students studying for the master's degree will have acquired the competences and knowledge corresponding to the 40 credits of technical courses specific to the field of construction, taught within the framework of the Bachelor in Civil Engineering.

#### Compulsory courses

|            |   |    |    |    |     |   |
|------------|---|----|----|----|-----|---|
| GCIV0201-2 | <i>Concretes and new Materials Technologies</i> - Luc COURARD - [0,5d FW, 6h Labo., 8h Proj.]   | Q1 | 32 | 20 | [+] | 5 |
| GCIV0643-1 | <i>Prestressed concrete structures and masonry</i> - Hervé DEGÉE, Boyan MIHAYLOV - [1d FW, 20h Proj.]<br><b>Corequisite :</b><br>GCIV0607-2 - Analyse des structures I<br>GCIV2173-1 - Béton armé   | Q1 | 26 | 26 | [+] | 5 |
| GCIV0644-1 | <i>Metallic and Steel-Concrete composite Structures</i> - JeanFrançois DEMONCEAU - [1d FW, 20h Proj.]<br><b>Corequisite :</b><br>GCIV0607-2 - Analyse des structures I<br>GCIV0185-7 - Méthodes numériques linéaires en génie civil et géologique<br>GCIV2172-1 - Calcul d'éléments métalliques | Q2 | 35 | 17 | [+] | 5 |
| GCIV0646-1 | <i>Buildings conception and execution</i> - JeanFrançois DEMONCEAU, JeanMarc FRANSSSEN, Boyan MIHAYLOV - [1d FW]  | Q2 | 40 | -  | [+] | 5 |
| GCIV2034-1 | <i>Free surface flow</i> - Sébastien ERPICUM, Michel PIROTON - [1d FW, 2h Labo., 10h Proj.]<br><b>Corequisite :</b><br>GCIV0604-3 - Hydraulique   | Q1 | 27 | 25 | [+] | 5 |
| GCIV2035-1 | <i>Fluvial hydrodynamics</i> - Pierre ARCHAMBEAU, Benjamin DEWALS - [30h Proj.]<br><b>Corequisite :</b><br>GCIV0185-7 - Méthodes numériques linéaires en génie civil et géologique<br>GCIV2034-1 - Ecoulements à surface libre  | Q2 | 26 | 26 | [+] | 5 |
| GCIV2036-2 | <i>Soils and Rocks mechanics</i> - Frédéric COLLIN - [1d FW, 5h Proj.]  | Q1 | 26 | 26 | [+] | 5 |
| GCIV2037-1 | <i>Structures analysis II</i> - Vincent DENOËL, Philippe RIGO - [15h Proj.]<br><b>Corequisite :</b><br>GCIV0607-2 - Analyse des structures I  | Q2 | 28 | 24 | [+] | 5 |
| GCIV0185-7 | <i>Linear numerical methods in Civil and Geological Engineering</i> - Laurent DUCHENE, Michel PIROTON - [30h Proj.]   | Q1 | 22 | 30 | [+] | 5 |
| GCIV0009-1 | <i>Design and execution of hydraulic navigation structures</i> - Philippe RIGO - [1d FW, 16h Proj.]<br><b>Corequisite :</b><br>GCIV2034-1 - Ecoulements à surface libre   | Q2 | 30 | 22 | [+] | 5 |
| GCIV0607-2 | <i>Structures Analysis I</i> - Vincent DENOËL   | Q1 | 28 | 24 | -   | 5 |
| GCIV2049-1 | <i>Geotechnical Structures Conception and Execution</i> - Frédéric COLLIN - [20d Proj.]<br><b>Corequisite :</b><br>GCIV2037-1 - Analyse des structures II   | Q2 | 17 | 35 | [+] | 5 |

GCIV2036-2 - Mécanique des sols et des roches  
GCIV0603-2 - Géotechnique et infrastructures

#### Block 2

Depending on your educational background or depending on the focus, it is possible that the prerequisites / corequisites for the 1st year of the programme are presented in the block 2. You are therefore invited to read through the list of courses in block 2 even if you are registering for the first time in this master.

#### Compulsory courses

|            |   |    |   |   |     |    |
|------------|---|----|---|---|-----|----|
| ASTG0016-1 | <i>Internship</i> - Sébastien ERPICUM - [20d FW]  | Q2 | - | - | [+] | 5  |
| ATFE0010-1 | <i>Master Thesis (including an introduction to methodology and research)</i> - Bertrand FRANÇOIS - [750h Proj.] | Q2 | - | - | [+] | 25 |

*Notice* : Final year trip: visits to works of art (optional)

#### Optional courses

Choose one focus from the following :

##### Professional focus in "civil engineering"

|            |   |    |    |    |     |   |
|------------|---|----|----|----|-----|---|
| GCIV2065-1 | <i>Design and execution of dams and water networks (english language)</i> - Benjamin DEWALS, Sébastien ERPICUM - [1d FW, 12h Proj., 2h Labo.] | Q1 | 18 | 18 | [+] | 3 |
| GCIV2174-1 | <i>Design and execution of road infrastructures (english language)</i> - Bertrand FRANÇOIS - [2d FW]  | Q1 | 20 | 10 | [+] | 3 |
| GCIV0642-1 | <i>Design and Construction of Bridges (english language)</i> - Frédéric GENS - [40h Proj.]  | Q1 | -  | 40 | [+] | 3 |
| PRCO0001-1 | <i>Integrated project</i> - Laurent DUCHENE, Frédéric GENS, Boyan MIHAYLOV - [2d FW, 100h Proj.]  | Q1 | -  | 90 | [+] | 7 |
| GEST3162-1 | <i>Principles of management (english language)</i> - François PICHault, Willem STANDAERT - [25h Proj.]  | Q1 | 30 | -  | [+] | 5 |

Choose courses totalling 9 ECTS from the following :

[...] Students who have not followed the GCIV2172-1, GCIV2173-1, GCIV0603-2 and GCIV0604-3 of the 'Constructions' option of the Civil Engineering Bachelor's programme or acquired the corresponding skills and knowledge will incorporate these four courses as a priority into their programme.

|   |   |    |    |    |     |   |
|---|---|----|----|----|-----|---|
| GCIV2178-1  | <i>Natural and technological risks in civil engineering (english language)</i> - JeanFrançois DEMONCEAU, Benjamin DEWALS - [10h Proj., 1d FW] | Q1 | 15 | 15 | [+] | 3 |
| GCIV2063-1  | <i>Planning buildings, co-ordination and safety on building sites</i> - Fabian BOUCHER - [1d FW]  | Q1 | 15 | 15 | [+] | 3 |
| GCIV2066-1  | <i>Fundamentals of transportation : transport planning (english language)</i> - Mario COOLS   | Q1 | 15 | 15 | -   | 3 |
| GCIV0133-9  | <i>Maintenance, repair and reinforcement of constructions (english language)</i> - Luc COURARD - [1d FW]                                      | Q1 | 20 | 20 | [+] | 3 |
| GCIV0165-1  | <i>Timber constructions (english language)</i> - JeanMarc FRANSSSEN   | Q1 | 15 | 15 | -   | 3 |
| GCIV2171-1  | <i>Non linear finite elements (english language)</i> - Frédéric COLLIN, Vincent DENOËL - [15h Proj.]  | Q1 | 20 | 20 | [+] | 3 |
| <b>Corequisite :</b><br>GCIV0185-7 - Méthodes numériques linéaires en génie civil et géologique |   |    |    |    |     |   |
| GCIV2050-2  | <i>Seismic engineering (english language)</i> - Hervé DEGÉE, Boyan MIHAYLOV - [15h Proj.]   | Q1 | 15 | 15 | [+] | 3 |
| GCIV2042-2  | <i>Fire safety engineering (english language)</i> - JeanMarc FRANSSSEN  | Q1 | 18 | 18 | -   | 3 |
| GCIV2182-1  | <i>Offshore Wind Structures (english language)</i> - Philippe RIGO - [20h   | Q1 | 12 | -  | [+] | 3 |

Proj.]

#### Professional focus in "urban and environmental engineering"

*Notice* : Students must submit a file for this focus (contact: jury chair). Only students who have acquired a sufficient number of credits in the field of 'Constructions' will be selected.

|            |   |    |    |    |     |   |
|------------|---|----|----|----|-----|---|
| UEEN0001-1 | <i>Water and energy in urban environment</i> (english language) - Pierre DEWALLEF, Benjamin DEWALS - [2d FW]                          | Q1 | 26 | 26 | [+] | 5 |
| UEEN0002-1 | <i>Land rehabilitation in urban environments</i> (english language) - Serge BROUYÈRE, Frédéric COLLIN - [10h Labo., 20h Proj., 2d FW] | Q1 | 20 | 10 | [+] | 5 |
| UEEN0003-1 | <i>Urban resilience</i> (english language) - Manal GINZARLY, Jacques TELLER - [60h Proj., 1d FW]                                      | Q1 | 36 | 16 | [+] | 5 |
| UEEN0004-1 | <i>Urban planning and transportation</i> (english language) - Mario COOLS, Jacques TELLER - [1d FW]                                   | Q1 | 26 | 26 | [+] | 5 |
| UEEN0005-1 | <i>Participatory Design at an Urban Scale</i> (english language) - Catherine ELSEEN, Clémentine SCHELINGS - [20h Proj., 1d FW]        | Q1 | 20 | 10 | [+] | 2 |
| UEEN0006-1 | <i>UEE Integrated Project</i> (english language) - Luc COURARD - [100h Proj., 1d FW]  | Q1 | -  | 90 | [+] | 5 |
| GEOG2053-1 | <i>Introduction to Urban GIS</i> (english language) - Roland BILLEN   | Q1 | 12 | 20 | -   | 3 |

*Notice* : with the agreement of the President of the jury, students can also choose a course from catalogue UNIC.

#### Bloc d'aménagement du programme de l'année

### Additional ECTS Master in civil engineering (120 ECTS)

#### Optional courses

Each student's programme will be determined by the jury depending on their prior training. If an applicant does not meet certain prerequisites, his or her programme may include up to 60 additional course credits essentially taken from the list below :

|            |  |    |    |    |     |   |
|------------|--|----|----|----|-----|---|
| MATH0006-3 | <i>Introduction to numerical analysis</i> (english language) - Quentin LOUVEAUX  | Q1 | 20 | 20 | -   | 4 |
| MECA0001-2 | <i>Mechanics of materials</i> - JeanFrançois DEMONCEAU, Laurent DUCHENE - [2h Labo., 12h Proj.]  | Q1 | 27 | 25 | [+] | 5 |
| MECA0011-2 | <i>Fluid Mechanics : Basics</i> - Michel PIROTON - [25h Proj.]   | Q2 | 20 | 30 | [+] | 4 |
| LANG0039-2 | <i>English 2, English for Engineering</i> (english language) - Véronique DOPPAGNE, Pascale DRIANNE, Philippe JEUKENNE, Martin POLSON, David VANMANSHOVEN - [20h Proj.] | TA | -  | 30 | [+] | 3 |
| MATH0067-1 | <i>Introduction to statistics and probability</i> - Vincent DENOËL - [15h Proj.]   | Q1 | 20 | 25 | [+] | 3 |
| GCIV0184-5 | <i>Building Materials</i> - Luc COURARD, Anne HABRAKEN - [0,5d FW, 12h Labo., 12h Proj.]   | Q2 | 36 | 16 | [+] | 5 |
| MECA0012-6 | <i>Solid mechanics</i> - Laurent DUCHENE - [15h Proj.]   | Q2 | 26 | 26 | [+] | 5 |
| GCIV0604-3 | <i>Hydraulic</i> - Pierre ARCHAMBEAU, Michel PIROTON - [1d FW, 15h Proj.]  | Q1 | 22 | 30 | [+] | 5 |
| GCIV0603-2 | <i>Geotechnics and infrastructure</i> - Bertrand FRANÇOIS - [1d FW, 2h Labo.]  | Q2 | 26 | 26 | [+] | 5 |
| GCIV0608-1 | <i>Introduction to Structures engineering</i> - JeanFrançois DEMONCEAU, Vincent DENOËL, JeanMarc FRANSSSEN - [4d FW, 40h Proj.]  | Q1 | 12 | 12 | [+] | 5 |

|            |   |    |    |    |     |          |
|------------|---|----|----|----|-----|----------|
| GEO0001-1  | <i>Geology and Engineering geology</i> - Alain DASSARGUES - [2d FW]                 | Q2 | 30 | 22 | [+] | <b>5</b> |
| GCIV2172-1 | <i>Metallic Elements Calculation</i> - JeanFrançois DEMONCEAU - [1d FW, 10h Proj.]  | Q2 | 26 | 26 | [+] | <b>5</b> |
| GCIV2173-1 | <i>Reinforced concrete</i> (english language) - Boyan MIHAYLOV - [1d FW, 10h Proj.] | Q2 | 26 | 26 | [+] | <b>5</b> |
| [...]      | Choose maximum 1 credit to complete the curriculum                                  |    |    |    |     |          |