

# Master of science in Architecture and Engineering

Focus Professional

## Bloc 1 | M-IRARE | MA-IRAR

### Compulsory common courses - Block 1

ARCH-H400	<b>Sustainable urban Design Studio</b>   Ahmed Zaib KHAN MAHSUD (Coordinator) and Hera Van Sande ⌚ 8 credits [workshop: 240h] 📅 first term 🗨 English
ARCH-H4002	<b>Sustainable architectural design studio</b>   Ahmed Zaib KHAN MAHSUD (Coordinator) and Hera Van Sande ⌚ 8 credits [workshop: 240h] 📅 second term 🗨 English
ARCH-H403	<b>Research methods in architectural engineering research</b>   Ine WOUTERS (Coordinator) and Ahmed Zaib KHAN MAHSUD ⌚ 3 credits [lecture: 12h, practical work: 24h] 📅 second term 🗨 English
ARCH-H406	<b>Post-war history of construction and architecture</b>   Rika DEVOS (Coordinator) ⌚ 4 credits [lecture: 12h, practical work: 36h] 📅 first term 🗨 English
ARCH-Y400	<b>Design of concrete structures</b>   Sven DE SUTTER (Coordinator) ⌚ 5 credits [lecture: 24h, practical work: 36h] 📅 first term 🗨 English
ARCH-Y402	<b>Spatial structures : design and analysis</b>   Lars DE LAET (Coordinator) ⌚ 4 credits [lecture: 24h, practical work: 24h] 📅 second term 🗨 English
ARCH-Y405	<b>Design of steel structures</b>   Wim HOECKMAN (Coordinator) ⌚ 5 credits [lecture: 24h, practical work: 36h] 📅 first term 🗨 English
ARCH-Y406	<b>Structural renovation techniques</b>   Ine WOUTERS (Coordinator) ⌚ 4 credits [lecture: 24h, practical work: 24h] 📅 second term 🗨 English
CNST-Y504	<b>Parametric design of transformable structures</b>   Niels DE TEMMERMAN (Coordinator) ⌚ 4 credits [lecture: 24h, practical work: 24h] 📅 first term 🗨 English
CNST-Y512	<b>Energy performance of buildings</b>   Filip DESCAMPS (Coordinator) ⌚ 6 credits [lecture: 24h, practical work: 48h] 📅 second term 🗨 English

### Electives MA1

#### Electives MA1

Choice of *minimum 9 ECTS* among the following list exclusively. Courses that have been already taken during the Bachelor curriculum cannot be selected anymore.

A total of nine credits chosen from the following

ARCH-Y008 (optional)	<b>Form-active structures</b>   Lars DE LAET (Coordinator) ⌚ 4 credits [lecture: 12h, practical work: 36h] 📅 second term 🗨 English
ARCH-Y407 (optional)	<b>Theoretical reflection on architectural heritage</b>   Stéphanie VAN DE VOORDE (Coordinator) ⌚ 4 credits [lecture: 24h, practical work: 24h] 📅 first term 🗨 English
CNST-H302 (optional)	<b>Soil mechanics</b>   Alessia Cuccurullo (Coordinator) ⌚ 5 credits [lecture: 24h, tutorial classes: 24h, practical work: 12h] 📅 first term 🗨 English
CNST-H406 (optional)	<b>Geotechnical engineering</b>   Alessia Cuccurullo (Coordinator) and Pierre GERARD ⌚ 5 credits [lecture: 24h, practical work: 36h] 📅 first term 🗨 English

CNST-H421  
(optional)

**Structural analysis and finite elements** | Peter BERKE (Coordinator) and Lincy Pyl

5 credits [lecture: 36h, tutorial classes: 24h]  first term  English

CNST-H422  
(optional)

**Sustainability in construction** | Didier Snoeck (Coordinator)

4 credits [lecture: 24h, practical work: 24h]  second term  English

CNST-H423  
(optional)

**Architecture, engineering and construction project management** | Philippe BOUILLARD (Coordinator)

5 credits [lecture: 36h, practical work: 24h]  second term  English

CNST-Y403  
(optional)

**Digitalization in construction** | Olivier Remy (Coordinator) and Rajan Dessai Filomeno Coelho

4 credits [lecture: 24h, practical work: 24h]  first term  English



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## Bloc 2 | M-IRARE | MA-IRAR

### Pre-defined choice of compulsory courses - Block 2

#### Compulsory courses

3 courses to select among these 4

*Three courses chosen from the following*

- ARCH-H502 (optional) **Theory of architecture and urbanism** | Ahmed Zaib KHAN MAHSUD (Coordinator)  
 4 credits [lecture: 24h, practical work: 24h] first term English
- ARCH-Y500 (optional) **Low energy design for sustainable buildings** | Filip DESCAMPS (Coordinator)  
 4 credits [lecture: 12h, practical work: 36h] first term English
- ARCH-Y501 (optional) **Daylighting in buildings** | Valérie Ann JACOBS (Coordinator), Bertrand Deroisy and Clotilde Pierson  
 4 credits [lecture: 12h, practical work: 24h, personal assignments: 30h] first term English
- PROJ-H502 (optional) **Design project competition** | Philippe BOUILLARD (Coordinator) and Vincent GERIN  
 4 credits [seminars: 30h, project: 90h] second term English

### Advanced design studio - Block 2

- ARCH-H504 **Advanced Design Studio** | Jonas Lindekens (Coordinator), Stéphane Meyrant and Laurent NEY  
 12 credits [workshop: 360h] academic year English

### Master thesis - Block 2

- MEMO-H507 **Master thesis architectural engineering** | Rika DEVOS (Coordinator) and Stéphanie VAN DE VOORDE  
 24 credits [personal assignments: 600h] first and second terms English

### Electives courses - Block 2

#### Choice of 12 credits

Choice of 12 credits among the following list, among the MA1 electives courses not chosen before, and among the 1 remaining course from the pre-defined courses list not taken by the student. Courses from other master programmes can also be selected up to 6 credits.

*A total of 12 credits chosen from the following*

#### Electives courses

- ARCH-Y502 (optional) **Visual and non-visual aspects of lighting** | Valérie Ann JACOBS (Coordinator), Soukaina Brarou and Gertjan Scheir  
 4 credits [lecture: 12h, practical work: 36h] first term English
- ARCH-Y503 (optional) **Bouwpraktijk** | Nicolas DECLERCK (Coordinator)  
 5 credits [lecture: 60h] second term English

ARCH-Y504 (optional)	<b>Histories of Architecture</b>   Pieter Martens (Coordinator) ⌚ 6 credits [lecture: 60h] 📅 first and second terms 🗨 English
CNST-H401 (optional)	<b>Prestressed concrete</b>   Stéphanie STAQUET (Coordinator) ⌚ 3 credits [lecture: 18h, practical work: 18h] 📅 second term 🗨 English
CNST-H409 (optional)	<b>Robustness of Structures and Reliability of materials</b>   Peter BERKE (Coordinator) ⌚ 4 credits [lecture: 24h, practical work: 24h] 📅 first term 🗨 English
CNST-H530 (optional)	<b>Integrated structural design</b>   Thierry MASSART (Coordinator) and Matthieu MALLIE ⌚ 6 credits [lecture: 24h, practical work: 48h] 📅 second term 🗨 English
CNST-Y400 (optional)	<b>Experimental techniques for characterization of construction materials</b>   Dimitrios ANGELIS (Coordinator) ⌚ 4 credits [lecture: 24h, practical work: 24h] 📅 first term 🗨 English
CNST-Y404 (optional)	<b>Lightweight composite structures</b>   Eric MOUSSIAUX (Coordinator) and Tine Tysmans ⌚ 4 credits [lecture: 24h, practical work: 24h] 📅 first term 🗨 English
CNST-Y507 (optional)	<b>Steel bridges construction</b>   Wim HOECKMAN (Coordinator) ⌚ 3 credits [lecture: 12h, tutorial classes: 24h] 📅 second term 🗨 English
CNST-Y515 (optional)	<b>Room acoustics</b> ⌚ 3 credits [lecture: 12h, practical work: 24h] 📅 first term 🗨 English
CNST-Y518 (optional)	<b>Bouwkundig ontwerp / Design of engineering constructions</b>   Danny VAN HEMELRIJCK (Coordinator) and Charlotte Nys ⌚ 5 credits [lecture: 24h, practical work: 36h] 📅 second term 🗨 Dutch
ELEC-Y514 (optional)	<b>Sustainability : an interdisciplinary Approach</b>   Cathy MACHARIS (Coordinator) and Waldo Galle ⌚ 6 credits [lecture: 36h, practical work: 24h] 📅 academic year 🗨 English
SOCA-D494 (optional)	<b>Sociologie de la ville</b>   Pierre LANNOY (Coordinator) ⌚ 5 credits [lecture: 24h] 📅 first term 🗨 French
STAG-H501 (optional)	<b>Internship (60 days)</b>   Frédéric ROBERT (Coordinator) ⌚ 10 credits [work placement: 300h] 📅 first term 🗨 English
STAG-H506 (optional)	<b>Internship architectural engineering (40 working days)</b>   Lincy Pyl (Coordinator) ⌚ 6 credits [personal assignments: 180h] 📅 first term 🗨 English
URBA-H500 (optional)	<b>Infrastructure and Mobility</b>   Philippe BOUILLARD (Coordinator) ⌚ 5 credits [lecture: 24h, tutorial classes: 12h, field trips: 30h, personal assignments: 30h] 📅 second term 🗨 English
URBA-H501 (optional)	<b>Urban and construction law</b>   Kim MORIC (Coordinator) ⌚ 3 credits [lecture: 24h, field trips: 12h] 📅 second term 🗨 English

### Free elective courses

Students have also the opportunity to choose courses among the courses of the 'transversal modules' of the School.

English : LANG-H500

Engineering and society : PROJ-H421 - GEST-H509 - BIME-G5505 - PHYS-F517

Sustainability : GEST-S492 - ENVI-F405 - CHIM-H504 - ENVI-F452 - ENVI-F454 - ELEC-Y514

Finance, accounting, management, marketing, logistics and quality : GEST-S101 - GEST-S318 - GEST-S421 - GEST-Y501 GEST-H501 - GEST-H502

Participation to a summer school : EDUC-H601

*Up to six credits chosen from the following*

BIME-G5505 (optional)	<b>Interfaculty and interdisciplinary program in Healthcare Innovation</b>   Hilde STEVENS (Coordinator) ⌚ 5 credits [lecture: 40h, tutorial classes: 20h] 📅 second term 🗨 English
CHIM-H504 (optional)	<b>Engineering aspects of circular economy</b>   Prakash VENKATESAN (Coordinator) ⌚ 5 credits [lecture: 24h, practical work: 36h] 📅 second term 🗨 English
DROI-C5174 (optional)	<b>Approche interdisciplinaire du droit de la propriété intellectuelle/Interdisciplinary Approach to In</b>   Julien CABAY (Coordinator) ⌚ 5 credits [lecture: 24h] 📅 first term 🗨 English/French

EDUC-H601 (optional)	<b>Summer School</b>   Johan GYSELINCK (Coordinator) ⌚ 5 credits [personal assignments: 5h] 📅 academic year 🗨 English
ELEC-Y514 (optional)	<b>Sustainability : an interdisciplinary Approach</b>   Cathy MACHARIS (Coordinator) and Waldo Galle ⌚ 6 credits [lecture: 36h, practical work: 24h] 📅 academic year 🗨 English
ENVI-F405 (optional)	<b>Climat: sciences et politiques</b>   Frank PATTYN (Coordinator) and Louise Knops ⌚ 5 credits [lecture: 40h] 📅 second term 🗨 French
ENVI-F452 (optional)	<b>Environmental impact analysis and management</b>   Wouter ACHTEN (Coordinator) ⌚ 5 credits [lecture: 24h, practical work: 12h, project: 24h] 📅 first term 🗨 English/French
ENVI-F454 (optional)	<b>Energie: Société et environnement</b>   Michel HUART (Coordinator) and Nadine MATTIELLI ⌚ 5 credits [lecture: 30h, practical work: 12h, project: 24h] 📅 first term 🗨 French
GEST-H501 (optional)	<b>Logistics Engineering and Management</b>   Alassane Ballé NDIAYE (Coordinator) ⌚ 5 credits [lecture: 12h, tutorial classes: 36h] 📅 first term 🗨 English
GEST-H502 (optional)	<b>Supply Chain Performance Analytics</b>   Alassane Ballé NDIAYE (Coordinator) ⌚ 5 credits [lecture: 12h, tutorial classes: 36h, personal assignments: 12h] 📅 second term 🗨 English
GEST-S101 (optional)	<b>Comptabilité financière</b>   Gilles GEVERS (Coordinator) and Laurent GHEERAERT ⌚ 5 credits [lecture: 36h, tutorial classes: 8h] 📅 second term 🗨 French
GEST-S318 (optional)	<b>Introduction to theoretical finance</b>   Laurent GHEERAERT (Coordinator) ⌚ 5 credits [lecture: 24h, tutorial classes: 24h] 📅 second term 🗨 English
GEST-S421 (optional)	<b>Entrepreneurial ecosystems</b>   Judith BEHRENS (Coordinator) ⌚ 5 credits [lecture: 24h, tutorial classes: 24h] 📅 second term 🗨 English
GEST-S492 (optional)	<b>Energy policy, sustainability &amp; management</b>   Adel EL Gammal (Coordinator), Julien BLONDEAU and Michel HUART ⌚ 5 credits [lecture: 36h, seminars: 24h] 📅 first term 🗨 English
GEST-Y501 (optional)	<b>Business Management and Entrepreneurship</b>   Marc GOLDCHSTEIN (Coordinator) ⌚ 3 credits [lecture: 33h] 📅 first term 🗨 English
LANG-H500 (optional)	<b>English for professional purposes</b>   Alexander CORNFORD (Coordinator) and Matthew LANGSLEY ⌚ 5 credits [tutorial classes: 48h, personal assignments: 12h] 📅 first and second terms 🗨 English
PHYS-F517 (optional)	<b>How To Make (almost) Any Experiment Using Digital Fabrication</b>   Denis TERWAGNE (Coordinator) ⌚ 5 credits [lecture: 24h, practical work: 24h] 📅 first term 🗨 French
PROJ-H421 (optional)	<b>Projet polydaire: expériences didactiques innovantes pour le secondaire</b>   Simon-Pierre GORZA (Coordinator) ⌚ 5 credits [project: 150h] 📅 academic year 🗨 French

