



Master of science in Architecture and Engineering

The 2024-2025 programme is subject to change. It is provided for information purposes only.

Programme mnemonic

MA-IRAR

> Focus *Professional* : M-IRARE

Studies level

Master 120 credits

Learning language

english

Schedule

office hours

Studies categories / subcategories

Art / Architecture and urban planning, Sciences and technics / Architecture and / Sciences and technics

Campus

Other campus and Solbosch

Students are trained in the design of sustainable, large-scale architectural projects, aiming at creating added value in complex (mainly urban) situations. Students learn to coordinate the planning and on-site building of architecture projects: they acquire specialist knowledge on organizing and directing projects and on mastering its technical aspects.

Programme's added value

The specificity of the Master in Architectural Engineering at ULB is determined by the central position attributed to the construction process in the teaching of architecture. In addition, the role of the project supervisor, capable of running a complex building project, is highlighted. The teaching programme has a specific focus on the skills required to design, coordinate and carry out large-scale projects in a multi-disciplinary environment necessitating an advanced technical and scientific approach and following the principles of sustainable design and building.

The Master in Architectural Engineering is organized in English, together with the VUB (Vrije Universiteit Brussel) in the BRUFACE platform, which provides a multicultural and multilingual environment.

- > Availability of an internship supported within a specific pedagogical framework
- > Courses taught in English, jointly with VUB

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Teaching methods

The teaching methods combine theory lectures with exercises, seminars and lab sessions. The architecture studio is conceived as

Programme objectives

The Master in Architectural Engineering completes a study programme in which architecture and construction engineering are closely intertwined: the learning objectives combine the mastering of construction engineering with the skills to **design architecture**, that is: to create meaningful places that favour the well-being of their future users. Students are trained in the advanced scientific knowledge and attitudes proper to construction and architecture sciences and research. Students learn to design and detail complex sustainable buildings, with special focus on their functions, load bearing structure, their equipment and the technologies they require.

Students are trained in the design of sustainable, large-scale architectural projects, aiming at creating added value in complex (mainly urban) situations. Students learn to coordinate the planning and on-site building of architecture projects: they acquire specialist knowledge on organizing and directing projects and on mastering its technical aspects.



the heart of the teaching project and represents 1/4 of the course programme.

Succeed in your studies

Choose

The information and guidance counsellors at the InfOR-études [<https://www.ulb.be/en/studies-info-desk-1>] service will help you choose your studies throughout the year.

Succeed

Take part in preparatory courses [<https://www.ulb.be/en/studies-info-desk-1>] or get help to succeed [<https://www.ulb.be/en/studies-info-desk-1>], before or during your studies.

Get help

Apply for financial aid, look for accommodation or a student job, get support [<https://www.ulb.be/fr/aides-services-et-accompagnement/aid-services-and-support-1>] for your specific needs.

International/Openness

This Master is organised jointly with VUB and is taught in English. This allows the students to be embedded in an international context, and to benefit from the various courses and infrastructures from both institutions.

Job opportunities

The Master degree allows direct access to a broad range of professions in architecture and construction engineering, among which:

- > Architectural engineer
- > Architect
- > Consultant engineer

- > Research engineer
- > Engineer in a consultancy or architecture office

The Master in Architectural Engineering also prepares for a career in research in architectural engineering or architecture.

Architectural engineers have access also to specific job opportunities, distinct from those open to architects and civil engineers. Large construction projects require, from the start of the design phase, up to the completion of the construction project, a project leader able to integrate and coordinate the aesthetic, programmatic, structural and technical aspects of the project. The evolution of the building industry and the equipment of contemporary architecture projects render this synthesis ever more complex and require an integrated

knowledge on HVAC, electricity, informatics, the physical behaviour of materials and structures and the principles of sustainable building.

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Contacts

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 <https://polytech.ulb.be/fr/les-etudes/masters/architecture>

Jury Presidents

Johan GYSELINCK (Professional) and Didier Snoeck (Professional)

Jury Secretary

Emanuele GARONE























Master of science in Architecture and Engineering

Focus Professional

Bloc 1 | M-IRARE | MA-IRAR







Compulsory common courses - Block 1

- ARCH-H400 **Sustainable urban Design Studio** | Ahmed Zaib KHAN MAHSUD (Coordinator) and Hera Van Sande
 8 credits [workshop: 240h]  first term  English
- ARCH-H4002 **Sustainable architectural design studio** | Ahmed Zaib KHAN MAHSUD (Coordinator) and Hera Van Sande
 8 credits [workshop: 240h]  second term  English
- ARCH-H403 **Research methods in architectural engineering research** | Ine WOUTERS (Coordinator) and Ahmed Zaib KHAN MAHSUD
 4 credits [lecture: 12h, practical work: 12h, personal assignments: 48h]  second term  English
- ARCH-H406 **Post-war history of construction and architecture** | Rika DEVOS (Coordinator)
 5 credits [lecture: 18h, tutorial classes: 6h, practical work: 24h, personal assignments: 12h]  second term  English
- ARCH-Y400 **Design of concrete structures** | Sven DE SUTTER (Coordinator)
 5 credits [lecture: 24h, practical work: 36h]  first term  English
- ARCH-Y402 **Spatial structures : design and analysis** | Lars DE LAET (Coordinator)
 5 credits [lecture: 18h, practical work: 24h, personal assignments: 24h]  second term  English
- ARCH-Y405 **Design of steel structures**
 5 credits [lecture: 24h, practical work: 36h]  first term  English
- ARCH-Y406 **Structural renovation techniques** | Ine WOUTERS (Coordinator)
 5 credits [lecture: 24h, practical work: 24h, personal assignments: 12h]  first term  English
- CNST-Y504 **Transformable structures for circularity** | Niels DE TEMMERMAN (Coordinator)
 5 credits [lecture: 18h, practical work: 24h, personal assignments: 24h]  first term  English
- CNST-Y512 **Energy performance of buildings**
 5 credits [lecture: 24h, practical work: 36h]  second term  English

Electives MA1

Course to choose

One course chosen from the following

- ARCH-Y407 (optional) **Theoretical reflections on architectural heritage** | Stéphanie VAN DE VOORDE (Coordinator)
 5 credits [lecture: 24h, practical work: 24h]  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-H423 (optional) **Architecture, engineering and construction project management** | Philippe BOUILLARD (Coordinator)
 5 credits [lecture: 36h, practical work: 24h]  second term  English

Master of science in Architecture and Engineering

Focus Professional

Bloc 2 | M-IRARE | MA-IRAR

Advanced design studio MA2

ARCH-H5041 **Advanced design studio - part 1** | Jonas Lindekens (Coordinator), Stéphane Meyrant and Laurent NEY
⌚ 4 credits [workshop: 120h] 📅 first term 🗨 English

ARCH-H5042 **Advanced design studio - part 2** | Jonas Lindekens (Coordinator), Stéphane Meyrant and Laurent NEY
⌚ 4 credits [workshop: 120h] 📅 second term 🗨 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 MA2

Elective courses

Up to 6 ECTS can be selected in the transversal module, or in other Master programmes at ULB or VUB (after academic validation).

1 to 28 credits chosen from the following

Elective courses

ARCH-H502 (optional) **Theory of architecture and urbanism** | Ahmed Zaib KHAN MAHSUD (Coordinator)
⌚ 5 credits [lecture: 24h, practical work: 24h, personal assignments: 12h] 📅 first term 🗨 English

ARCH-Y407 (optional) **Theoretical reflections on architectural heritage** | Stéphanie VAN DE VOORDE (Coordinator)
⌚ 5 credits [lecture: 24h, practical work: 24h] 📅 first term 🗨 English

ARCH-Y500 (optional) **Low energy design for sustainable buildings**
⌚ 5 credits [lecture: 12h, practical work: 48h, personal assignments: 6h] 📅 first term 🗨 English

ARCH-Y501 (optional) **Daylighting in buildings**
⌚ 4 credits [lecture: 12h, practical work: 24h, personal assignments: 30h] 📅 first term 🗨 English

ARCH-Y503 (optional) **Forensic engineering** | Nicolas DECLERCK (Coordinator)
⌚ 5 credits [lecture: 48h] 📅 second term 🗨 English

CNST-H406 (optional) **Geotechnical engineering** | 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-Y515 (optional) **Room acoustics**
⌚ 3 credits [lecture: 12h, practical work: 24h] 📅 first term 🗨 English

ELEC-Y514 (optional)	Sustainability : an interdisciplinary Approach Cathy MACHARIS (Coordinator) and Waldo Galle ⌚ 6 credits [lecture: 36h, practical work: 24h, personal assignments: 100h] 📅 academic year 🗨 English
PROJ-H502 (optional)	Design project competition Philippe BOUILLARD (Coordinator) and Vincent GERIN ⌚ 4 credits [seminars: 30h, project: 90h] 📅 second term 🗨 English
STAG-H501 (optional)	Internship (60 days) Frédéric ROBERT (Coordinator) ⌚ 10 credits [work placement: 300h] 📅 first term 🗨 English
STAG-H506 (optional)	Internship architectural engineering (40 working days) Lincy Pyl (Coordinator) ⌚ 6 credits [personal assignments: 180h] 📅 first term 🗨 English
URBA-H500 (optional)	Infrastructure and Mobility Philippe BOUILLARD (Coordinator) ⌚ 5 credits [lecture: 24h, tutorial classes: 12h, field trips: 30h, personal assignments: 30h] 📅 second term 🗨 English
URBA-H5002 (optional)	Urban, environmental and construction law 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)	Interfaculty and interdisciplinary program in Healthcare Innovation Hilde STEVENS (Coordinator) ⌚ 5 credits [lecture: 40h, tutorial classes: 20h] 📅 second term 🗨 English
CHIM-H504 (optional)	Engineering aspects of circular economy Prakash VENKATESAN (Coordinator) ⌚ 5 credits [lecture: 24h, practical work: 36h] 📅 second term 🗨 English
DROI-C5174 (optional)	Approche interdisciplinaire du droit de la propriété intellectuelle/Interdisciplinary Approach to In Julien CABAY (Coordinator) ⌚ 5 credits [lecture: 24h] 📅 first term 🗨 English/French
EDUC-H601 (optional)	Summer School Johan GYSELINCK (Coordinator) ⌚ 5 credits [personal assignments: 5h] 📅 academic year 🗨 English
ELEC-Y514 (optional)	Sustainability : an interdisciplinary Approach Cathy MACHARIS (Coordinator) and Waldo Galle ⌚ 6 credits [lecture: 36h, practical work: 24h, personal assignments: 100h] 📅 academic year 🗨 English
ENVI-F405 (optional)	Climat: sciences et politiques Frank PATTYN (Coordinator) ⌚ 5 credits [lecture: 40h] 📅 second term 🗨 French
ENVI-F452 (optional)	Environmental impact analysis and management Wouter ACHTEN (Coordinator) ⌚ 5 credits [lecture: 24h, practical work: 12h, project: 24h] 📅 first term 🗨 English/French
ENVI-F454 (optional)	Energie: Société et environnement Michel HUART (Coordinator) and Nadine MATTIELLI ⌚ 5 credits [lecture: 30h, practical work: 12h, project: 24h] 📅 first term 🗨 French
GEST-H501 (optional)	Logistics Engineering and Management Alassane Ballé NDIAYE (Coordinator) ⌚ 5 credits [lecture: 12h, tutorial classes: 36h] 📅 first term 🗨 English
GEST-H502 (optional)	Supply Chain Performance Analytics Alassane Ballé NDIAYE (Coordinator) ⌚ 5 credits [lecture: 12h, tutorial classes: 36h, personal assignments: 12h] 📅 second term 🗨 English
GEST-S101 (optional)	Comptabilité financière Laurent GHEERAERT (Coordinator) and Gilles GEVERS ⌚ 5 credits [lecture: 36h, tutorial classes: 8h] 📅 second term 🗨 French



- GEST-S318
(optional) **Introduction to theoretical finance** | Laurent GHEERAERT (Coordinator)
⌚ 5 credits [lecture: 24h, tutorial classes: 24h] 📅 second term 🗨 English
- GEST-S421
(optional) **Entrepreneurial ecosystems** | Judith BEHRENS (Coordinator)
⌚ 5 credits [lecture: 24h, tutorial classes: 24h] 📅 second term 🗨 English
- GEST-S492
(optional) **Energy policy, sustainability & management** | Adel EL Gammal (Coordinator), Julien BLONDEAU and Michel HUART
⌚ 5 credits [lecture: 36h, seminars: 24h] 📅 first term 🗨 English
- GEST-Y501
(optional) **Business Management and Entrepreneurship** | Marc GOLDCHSTEIN (Coordinator)
⌚ 3 credits [lecture: 33h] 📅 first term 🗨 English
- LANG-H500
(optional) **English for professional purposes** | Alexander CORNFORD (Coordinator)
⌚ 5 credits [tutorial classes: 48h, personal assignments: 12h] 📅 first and second terms 🗨 English
- PROJ-H421
(optional) **Projet polydaire: expériences didactiques innovantes pour le secondaire** | Simon-Pierre GORZA (Coordinator)
⌚ 5 credits [project: 150h] 📅 academic year 🗨 French