BES-D

Digital Construction

Learning Objectives

The BES-D track specializes building engineers in the implementation and use of Information Models, to support:

- the design of new structures or interventions on existing ones, including the validation of related design choices;
- the selection of operators and the management of the construction site;
- testing, inspection, and the formal transfer of the building to the facility manager;
- ongoing facility management and maintenance activities;
- the end-of-life phase of a building.

Learning Outcomes

A graduate of the BES-D track is a building engineer skilled in managing information models for complex projects, capable of using them critically and participating in the development of highly innovative tools for this purpose. This specialist can competently manage and discuss advanced IT applications, software (including artificial intelligence), hardware, and data usage. They remain deeply aware of the complexities of building design, the specific challenges of construction sites, maintenance, and the management of properties and their users. Furthermore, they are equipped to handle the strategic (financial and economic) and operational (construction-related) governance of processes for the reuse, redevelopment, and recycling of building components at the end of their useful life.

Job Opportunities

The Building Engineer for Sustainability, with a specialization in Digital Construction, is an expert capable of supporting stakeholders, solving problems, and leveraging opportunities throughout every stage of a building's lifecycle.

They are the specialist responsible for drafting Exchange Information Requirements (EIR) on the client side, as well as responding to them or verifying compliance on the design side (through BIM Execution Plans). They play a key role within both the contracting firm and construction management, particularly in managing information dynamics and mitigating risks during the construction phase.

First year

60 ECTS

48 ECTS

	ECTS
Life cycle driven structural Design	**9**
Integrated Sustainable Building Design	**9**
Applied Building Physics	**9**
Scientific computing for sustainable building engineering	**6**
Construction materials, innovation and sustainability	**6**
Project and Construction Management or **Tecnica e Sicurezza dei Cantieri Edili**	**9**

12 ECTS

	ECTS
Phygital Design – Digital modeling for manufacturing and off-site construction	**6**
Design Quality Management and Validation Lab	**6**

Second year

42 ECTS + 6 ECTS Internsip + 12 ECTS Final MSc thesis

42 ECTS

	ECTS
BIM Based Renovation and Construction Processes*	**6**
Advanced manufacturing and circular design Lab	**9**
Life Cycle Cost Managament*	**6**
Digital Fabrication and Construction Robotics*	**9**
Elective 1	**6**
Elective 2	**6**

*provisional title