

CONSTRUCTION SITE ORGANIZATION

(6 CFU – Academic Year 2023/24)

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COURSE OBJECTIVES:

The course is characterised by a multidisciplinary approach, so it has to consider different objectives. Firstly, students will acquire a set of competencies in the field of management like time and cost control, optimisation of resources and lean organisation of the working activities. Then, with the purpose of better improving sustainability aspects and the whole complexity of the project, digital techniques and tools are included in the educational path. At the end the student will be proficient in the most used Project Management methods and techniques, Building construction tools and methods and, mostly, the construction site organization methodologies integrated with the context.

Keywords: Project Management, Building Construction, BIM, Lean Construction, Building Process Management.

LEARNING OUTCOMES

- Building process management techniques and tools: a) time scheduling with diagrammatic and graph methods; b) cost control; c) integrated Project Delivery approach.
- Building Information Modeling techniques and applications in case studies;
- Define the BIM execution plan of a project and the Employer Information requirements of a construction process;
- Produce and read a Gantt chart of a Construction site.

COURSE DESIGN

Due to the COVID-19 emergency, the course will be fully held online using both synchronous and asynchronous activities (mostly according to the timetable reported below).

For the connection we will use meet at the link

<https://meet.google.com/heb-cfbz-rwq?authuser=0>

This link will be valid for the entire duration of the course.

PROGRAM

SECTION A) PROJECT MANAGEMENT: objectives and techniques, definitions, economical issues of building construction sector, collaboration among actors, organisational charts, Real estate and Project, Project Environments, tenderings.

SECTION B) HEALTH & SAFETY MANAGEMENT: actors and institutions involved; construction site machinery and their use, risk analysis and evaluation, health and safety coordination plans and site layout planning and monitoring.

ATTENDANCE

Attendance is taken and strongly recommended.

TABLE OF CONTENTS

Week 1			
	12:00/14:00		Management of technical professions: roles and implications, the figure of the architect and the engineer at the rise of the digital age.
	14:30/17:30		BIM and Digital management workshop: introducing BIM approach and the state of the art of digital techniques in construction sector.
	16:30/18:30		Management of technical professions: in-depth for Master Degree students.
Week 2			
	12:00/14:00		Project Management: introduction, roles and figures. Analysing a project team hierarchy.
	14:30/17:30		BIM and Digital management workshop: templates and interface at a glance.
	16:30/18:30		Project Management: in-depth for Master Degree students.
Week 3			
	12:00/14:00		Project Management: metrics, introduction to the concept of quality, levels of building design process.
	14:30/17:30		BIM and Digital management workshop: introduction to categories, families and instances for modeling a simple building.
	16:30/18:30		Project Management: in-depth for Master Degree students.
Week 4			
	12:00/14:00		Project Management: quality definition and analysis on communications and building process actors relationship.
	14:30/17:30		BIM and Digital management workshop: levels, views and templates. Workshop on simple building modeling.
	16:30/18:30		Project Management: in-depth for Master Degree students.
Week 5			
	12:00/14:00		Project Management: tendering, contracts and rules of building process. Local law and generic rules. Decision support systems.
	14:30/17:30		BIM and Digital management workshop: family editing and property set management. Workshop on simple building modeling.
	16:30/18:30		Project Management: in-depth for Master Degree students.
Week 6			
	12:00/14:00		Project Management: GANNT, PERT, CPM and graph theory in general. Location Based Management and Takt planning.
	14:30/17:30		BIM and Digital management workshop: floors, roofs. Topography and details. QTO. Workshop on simple building modeling.
	16:30/18:30		Project Management: in-depth for Master Degree students.
Week 7			
	12:00/14:00		Health & Safety: excavations. Machineries and techniques. Risk analysis and evaluation. Local law and generic rules.
	14:30/17:30		BIM and Digital management workshop: construction site modeling and phasing. Cost calculation and material take-off 1/2.
	16:30/18:30		Project Management: in-depth for Master Degree students.
Week 8			
	12:00/14:00		Health & Safety: foundations. Reinforced concrete construction techniques. Risk analysis and evaluation. Local law and generic rules.
	14:30/17:30		BIM and Digital management workshop: construction site modeling and phasing. Cost calculation and material take-off 2/2.
	16:30/18:30		Project Management: in-depth for Master Degree students.

Week 9			
	12:00/14:00		Health & Safety: scaffoldings. Types and techniques. Risk analysis and evaluation. Local law and generic rules.
	14:30/17:30		BIM and Digital management workshop: 4D and 5D. Linking a Gantt chart to a construction site digital model 1/2
	16:30/18:30		Project Management: in-depth for Master Degree students.
Week 10			
	12:00/14:00		Health & Safety: electrical risks. Effects of electric power on the human body. Risk analysis and evaluation.
	14:30/17:30		BIM and Digital management workshop: 4D and 5D. Linking a Gantt chart to a construction site digital model 2/2
	16:30/18:30		Project Management: in-depth for Master Degree students.
Week 11			
	12:00/14:00		Health & Safety: noise reduction. Planning a sustainable construction site. Location based management applications.
	14:30/17:30		BIM and Digital management workshop: 4D and 5D BIM dimensions.
	16:30/18:30		Project Management: in-depth for Master Degree students.
Week 12			
	12:00/14:00		Health & Safety: tools and methods for H&S management and site coordination. H&S layout organization and risk evaluation 1/2.
	14:30/17:30		BIM and Digital management workshop: final considerations and scheduling practice.
	16:30/18:30		Project Management: in-depth for Master Degree students.
Week 13			
	12:00/14:00		Health & Safety: tools and methods for H&S management and site coordination. H&S layout organization and risk evaluation 1/2.
	14:30/17:30		BIM and Digital management workshop: final considerations and scheduling practice.
	16:30/18:30		Project Management: in-depth for Master Degree students.