SAPIENZA
UNIVERSITÀ DI ROMA

Dipartimento di Pianificazione, Design
Tecnologia dell'Architettura

Programme and Timetable

GISBIM
INTERNATIONAL
SUMMER SCHOOL

Rome on-line International Summer School

GISBIM

for digital integrated design

Faculty of Architecture Valle Giulia

31 august – 11 september 2020

In cooperation with

IUC INTERNATIONAL URBAN COOPERATION

A European Union Programme

International Partner

TONGJI UNIVERSITY CAUP College of Architecture & Urban Planning (CAUP) Shanghai China

Yantai University China

Under the Patronage

iila Organizzazione internazionale italo-latina americana

Embajada de Costa Rica en la Republica Italiana

Embajada de Panamà en la Republica Italiana

MODULE 1

Organization and digitization of information about buildings and civil engineering works, including building information modelling (BIM)

- Concepts and principles
- Delivery phase of the assets
- Platformization of AEC Industry

Prof. Francesco Ruperto

Hours: 6

Lectures

CFU ECTS: 1

MODULE 2

The integrated management of sustainable processes of requalification and recovery in the architectural and environmental heritage.
Purpose of the activity is to learn what are the methods and tools to investigate and learn about historical architecture and subsequently organize the data for different types of processing: on one hand the use of ICT to communicate historical and cultural heritage; on the other hand, the use of HBIM to preserve and reuse existing buildings and areas.

Prof. Tommaso Empler

Hours: 6

Lectures

CFU ECTS: 1

MODULE 3

Geographic Information Systems and its integration with BIM methodologies.
Why to integrate GIS with the BIM methodologies, tools and procedures? Beyond the 3D modelling: geography and GIS multi-thematic environment, additional dimensions of BIM data.
City Information Models (CIM) to build and manage sceneries of the Smart City; Digital Twins and Big Data for cities and territories.
Some GIS-BIM applications: complex asset management; design and maintenance process for linear infrastructures; tri-dimensional cadastre.
Introduction to GIS, to relational DBMS, to Geo-Data; relations among concepts as Scale, Informative details and domains, LOD; Attributes and classifications from thematic overlay to BIM categories.
Some operations in GIS-BIM integrated environment:

- BIM feeding GIS Data through aggregation and summarize;
- GIS feeding BIM for new buildings context aware data

Which models for GIS and BIM interoperability; 3D modelling in GIS environment; Cartographic models in BIM environment; Standardisation of data structures and interchange formats: sharing and integrated management of spatial data through the Common Data Environment (CDE).

Ing. Patrick Maurelli

Hours: 6

Lectures

CFU ECTS: 1

MODULE 4a

Digital methods and tools in the construction process for an efficient project management workflow: case histories
The activity provides an analysis of methods and applications related to the use of digital methods and tools for the control and optimization of different phases in the construction process.
The opportunities deriving from the integration of information systems in the project workflow will be explored also through the analysis of specific thematic case studies about the interaction of Digital Twins & Artificial Intelligence systems aimed at optimizing processes.

Prof. Sofia Agostinelli

Hours: 6

Lectures

CFU ECTS: 1

MODULE 4b

Analysis of integrated models and applicative case studies within the digital approach for planning and programming the activities through the process phases.

The activity explores the theoretical and applicative aspects of an integrated 4D/5D project planning coming from the analysis of a 3D model, then proceeding to the realization of a 5D model up to the different levels of a 4D programming. The approach also involves the description of different planning techniques both in the design and construction phases.

Dott. Stefano Amista

Hours: 8

Lectures

CFU ECTS: 1

MODULE 5

- Performance analysis and optimization design of green buildings driven by digital technology (BIM, Rhino, etc.): lectures and hands-on exercises
- Algorithms and how they change the architectural design: lectures
- Sustainable urban design in the digital era: lectures
- Green practices in China’s building industry: lectures

Prof. Xing Shi, College of Architecture and Urban Planning, Tongji University

Hours: 6

Lectures, case studies, and Chinese practices

CFU ECTS: 1

FiNAL TEST

Final report for work groups to discuss in specific workshops with the teaching staff of the ISS.

Prof. Fabrizio Cumo

Hours: 2

Individual learning check

Sapienza Professors responsible for the teachings and their short curricula

Prof. Marco Casini is a leading academic in the Green and Smart Building sector with over 20 years experience in Building Sciences. He is an environmental engineer, PhD in Environmental Engineering and Research Fellow in Architecture Technology. Since 2002 he has been Professor of Architecture Technology and of Environmental Certification of Buildings at the Faculty of Architecture of Sapienza University where he also teaches in several Master's, PhD and Graduate schools on subjects pertaining to Energy and Environmental Sustainability for Buildings.

Prof. Tommaso Empler
Since 1998 lecturer in Automatic Drawing at Sapienza University of Rome, Faculty of Architecture; Researcher since 2010 at the same Faculty; since 2012 Head of the training course in Computer Graphics 2D and 3D with free software; head of the training course in Interaction and Multimedial Experience; teacher of the BIM Master and member of the Scientific Teaching Council.

Coordinator

Prof. Flavio Rosa graduated in Environmental Engineering and Land Management at the Faculty of Engineering of La Sapienza Rome. He is a qualified engineer and is registered with the province of Rome. PhD in Energy at the Department of Nuclear Engineering and Energy Conversions (DINCE) with a thesis on the use of Biomass in protected natural areas. Research fellow: A.A. 2010/11 Study and Evaluation of Environmental Problems Related to the Maritime Transport of Dangerous Goods; AA.AA. 2011/12 2012/13 Implementation of Renewable Energy Within Port Areas. Adjunct Professor of Environmental Technical Physics at the Faculty of Architecture in Rome from 2014 to the present. Professor of 1st level BIM University Master - Building Information Modelling Faculty of Architecture Sapienza Rome and 1st level Master of Building Process Management - Project Management. Theses tutor and supervisor in the field of RES and their interaction with the built environment at the Faculty of Architecture at La Sapienza Rome. Reviewer of scientific articles in the field of sustainable architecture and systems integration in historic buildings. Author of publications in the field of renewable energy and energy retrofit within historic buildings. Head of international relations for the SAPIENZA CITERA CENTER. International Summer School Coordinator with operations in Italy, China, Panama and Costa Rica.

Start of lessons: **31/08/2020**

Delivery language: **English**

Assigned CFU: **6 ECTS-CFU**

Frequency modes of educational activities: **The attendance of at least 75% of the activities entitles the student to a certificate of attendance.**

Elearnig platform: ZOOM

Stage: **unscheduled**

Registration fee: **300 € + 16 taxes**

Any partial or total exemption fees from the payment of the Department's portion of the fee expressed as a percentage. 40 % discount for Ph D students Sapienza

Timetable

	Module	Monday 31/08/2020	Module	Tuesday01/09/2020	Module	WEDNESDAY 02/09/2020	Module	Thursday 03/09/2020	Module	Friday 04/09/2020	Saturday 05/09/2020	Sunday 06/09/2020
9:00 - 9:50	1	Ruperto 1	2	Empler 1	1	Ruperto 3	4a	Agostinelli 3	1	Amista 3		
10:00 - 10:50	1	Ruperto 2	2	Empler 2	1	Ruperto 4	4a	Agostinelli 4	1	Amista 4		
Break 20 min												
11:10 12:00	4a	Agostinelli 1	4b	Amista 1	1	Ruperto 5	3	Maurelli 1	4b	Amista 5		
12:10 - 13:00	4a	Agostinelli 2	4b	Amista 2	1	Ruperto 6	3	Maurelli 2	4b	Amista 6		

	Module	Monday 07/09/2020	Module	Tuesday 08/09/2020	Module	Wednesday 09/09/2020	Module	Thursday 10/09/2020	Module	Friday 11/09/2020	12-set	13-set
9:00 - 9:50	4a	Agostinelli 5	5	Shi 1	2	Empler 3	3	Maurelli 3	5	Shi 5		
10:00 - 10:50	4a	Agostinelli 6	5	Shi 2	2	Empler 4	3	Maurelli 4	5	Shi 6		
Break 20 min												
11:10 12:00	4b	Amista 7	5	Shi 3	2	Empler 5	3	Maurelli 5		Final test		
12:10 - 13:00	4b	Amista 8	5	Shi 4	2	Empler 6	3	Maurelli 6		Final test		