



*SAGRADA FAMILIA is Antoni Gaudi's masterpiece, which mirrors his interesting career, a building the construction of which has continued beyond his and his followers' deaths. This long, still under progress design and construction process has been accompanied by strong controversy and outstanding achievements within and beyond the architectural world. The seed for the Sagrada Familia started at the end of the 19<sup>th</sup> century, when the Barcelona Devotees of Saint Joseph travelled to Italy and decided to build a temple dedicated to the Holy Family. The appointed diocesan architect began this project, which become unsustainable after the first year and was assigned to the young architect Antoni Gaudi. Gaudi redesigned it and devoted the rest of his life to it, along with his followers, who continued its construction totally respecting their master architect's project. Nowadays, the current pragmatic period is led by modernized technical and management offices, bearing in mind multiple interests – cultural, economic, religious, technical, touristic, etc. - in collaboration with international building companies, engineering firms and universities.*

*Throughout its construction, there have been periods of economic poverty, war and post-war, loss of plans and models, richness and opulence. Barcelona's citizens have changed their beliefs and attitudes towards the temple, from support to indifference and opposition. Locally and internationally there have also been sways from criticism to acclamation. Within this context, the strengths and weaknesses of the Sagrada Familia can help architects to learn about urban planning, design, construction, incorporation of modern techniques and restoration.*

*For instance, this building is currently tightly inserted in one urban block of the interesting Cerdà Master Plan, although Gaudi's project had required occupying the southern blocks until Diagonal avenue, which would mean at present the demolition of numerous buildings, an aspect without support from neighborhood residents or the City Council. Its design follows Gaudi's curvilinear geometries, that were first developed with ingenious models and nowadays assisted by the latest software tools, 3d-printing and virtual reality technologies. Its construction started with ancient techniques – first square ashlar and*



*later rubble stone masonry -, which were progressively substituted by reinforced concrete and massive post-tensioned stone panels produced using CNC machinery and robots. Experienced artisans also started its restoration at the end of the 20<sup>th</sup> century, currently combined and helped by drones and 3d scanner technologies.*

*This seminar combines brief theoretical lectures with practical activities to learn and discuss this polemic architectural case study.*

*This seminar also covers innovation and sustainability while relating Gaudi's masterpiece to other architectural cases. Furthermore, this seminar aims to develop more mature visions for this controversial building can provide beneficial insights for its attendees, the building itself and future architectural projects.*

ORIOLO PONS has been an architect since 2004, professor of Architectural Technology at ETSAB, UPC since 2008 and doctor since 2009. His professional experience as an architect, for example, in the construction of Barcelona's Basilica Sagrada Familia (2013-17) and in the Precast company Planas (2004-8 and 2011-12), is strongly related to his research projects: sustainability and new technologies in architecture. He is an expert in educational, off-site and post-disaster architecture as well as in construction using concrete and recycled materials. He has led and participated in competitive projects on these areas of expertise at the UPC since 2009 and at the iMat Research Center (2008-11), being the author of several patents and presenting the results in numerous conferences, publications and patents.

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## INNOVATION AND SUSTAINABILITY OF THE URBAN PLANNING, DESIGN, CONSTRUCTION AND RESTORATION OF THE SAGRADA FAMILIA IN BARCELONA

/ MARTEDI' 5 LUGLIO 2022/ ORE 16.00/ AULA E. BASILE  
/ DIPARTIMENTO DI ARCHITETTURA/ ED. 08/ UNIPA

### SALUTI

/SIMONA COLAJANNI

### INTRODUCE E MODERA

/ TIZIANA CAMPISI



CORSO DI LAUREA MAGISTRALE  
IN INGEGNERIA  
EDILE-ARCHITETTURA [LM-4]  
DIPARTIMENTO  
DI ARCHITETTURA DI PALERMO



DOTTORATO DI RICERCA  
IN ARCHITETTURA,  
ARTI E PIANIFICAZIONE  
DIPARTIMENTO  
DI ARCHITETTURA DI PALERMO