



Course unit English denomination	Urban planning and transport infrastructure solutions for sustainable and smart cities
SS	CEAR-03/A, 12/A (ex ICAR/04, ICAR/20)
Teachers in charge	Giovanni Giacomello, Luigi Siviero
Teaching Hours	24 (18+6)
Number of ECTS credits allocated	4 (3+1)
Course period	February
Course delivery method	☒ In presence ☐ Remotely ☐ Blended
Language of instruction	English
Mandatory attendance	☒ Yes (80% minimum of presence) ☐ No
Course unit contents	Decision-making processes and strategies for the development of spatial strategic visions; approaches for an innovative urban and landscape design. Design, construction and management of sustainable transport infrastructures in planning strategies, specifically for large metropolitan areas; tools for the urban and landscape project. Participatory mechanisms, and regulatory procedures applied to regional planning and transport infrastructures organization; relationships among different level plans and sectorial projects and interventions required integration. Transport infrastructures solutions in urbanized areas and outside the cities. Study and development of transport infrastructures solution for mitigating the urban heat island. Characterization procedures suitable for evaluating sustainability of solutions and materials for transport infrastructures. Theory, modelling, and applications to maximize low environmental impact of the transport infrastructures. Sustainable infrastructures management: monitoring, sensors, control/management systems, complex modelling (digital twins) and simulation.
Learning goals	The main aim of the course is acquiring and developing knowledge about theories, techniques and methods of analysis, interpretation and design of the contemporary landscape and technics of infrastructures. Teaching and



	learning activities will focus on theories of landscape, contemporary city design, transport infrastructure, as well as on techniques regarding functional layouts and formal composition of the city space and landscape infrastructure. Furthermore, the course aims at boosting transversal skills, such as independent critical thinking, capability to communicate and fully explain the project along with its conceptual fundamentals, awareness of everyone's role as a professional in complex contexts, as well as the capability to code, control and solve complex problems through ground-breaking and innovative methodologies.
Teaching methods	The lessons are held by the teachers of the course, with the help of case studies, theories, and best practices in the different topics of the issue. Frontal lecturing, using blackboard, overhead projector and video projector.
Course on transversal, interdisciplinary, transdisciplinary skills	☒ Yes ☐ No
Available for PhD students from other courses	☒ Yes ☐ No
Prerequisites (not mandatory)	Basic knowledge on transport infrastructures and urban planning.
Examination methods (if applicable)	The final exam consists in a critical discussion on the topics of the course.
Suggested readings	The course materials (pdf files and other materials) will be uploaded to the Moodle platform from time to time or during the course.
Additional information	The course will take place in room "ICAR/04" (ground floor) in presence.
