Course unit English denomination	Life cycle design for sustainable structures
SS	**CEAR-07/A**
Teacher in charge (if defined)	FLORA FALESCHINI
Teaching Hours	24
Number of ECTS credits allocated	4
Course period	July 2026
Course delivery method	☒ In presence ☐ Remotely ☐ Blended
Language of instruction	English
Mandatory attendance	☒ Yes (70% minimum of presence) ☐ No
Course unit contents	Module 1: Life cycle analysis approach for structural design: codes, recommendations, assessment methods and tools, sustainability indicators Module 2: Sustainable construction materials: recycled and industrial aggregates, supplementary cementitious materials, new binders, recycled and slag concretes Module 3: New construction methods: prefabrication, automation, 3D printing Module 4: Maintenance of structures: inspection, damage and degradation protocols Module 5: Durability assessment Module 6: Maintenance plans Case studies and examples will be provided during the course.
Learning goals	At the end of the course the student will be able to understand the fundamental principles of the “life cycle thinking” approach applied to the construction sector. The student will also be able to address the life cycle design of reinforced concrete structures and will know the main recent advances in the field of green construction, sustainable recycled materials in reinforced concrete and additive manufacturing processes.
Teaching methods	Theory and practice lessons
Course on transversal, interdisciplinary, transdisciplinary skills	☒ Yes ☐ No

Available for PhD students from other courses	☒ Yes ☐ No
Prerequisites (not mandatory)	-
Examination methods (if applicable)	Individual project
Suggested readings	Slides and scientific papers provided by the teacher
Additional information	-