RESEARCH THEME

XXXIX cycle – a.y. 2023/2024

Title of the doctoral research	COMPUTATIONAL DESIGN FOR SUSTAINABLE DEVELOPMENT
Proponent professor	Fiammetta Costa
Abstract	The research theme arises at the intersection between digital technologies of computational nature and ecological/social sustainability. The reference context for the research is computational design, understood as the design process that, taking advantage of the potential of computation, integrates digital emerging technologies in the development of responsive systems. In this context, user and environmental data can drive a transition from descriptive to generative approaches establishing an unprecedented feedback loop in design research and practice. The opportunity is mainly due to the enabling possibilities of technologies to interact with the context: data can encode information and become a source to simulate behaviors, prefigure and perform adaptive outcomes. Moreover, this relationship (environment and design) is not limited to resources/energy management but draws forms of an artificial ecology (bio-digital integrated systems) as an expression of a new alliance between design and nature. The proposal aims to develop original knowledge in the interdisciplinary field of interaction design and sustainable transition, taking advantage of computational design tools. It addresses emerging questions in design practice and research, such as: • How can bio-digital integrated systems support biodiversity and interaction at individual and community level? • How can parametric codes and data address this challenge? • How can social, technological, and environmental issues be integrated into sustainable development through computational design?
Keywords	Digital technologies, sustainable transition, design by data