Biological organisms cope with the demands of their environments using solutions quite unlike the traditional human-engineered approaches to problem solving. Biological systems tend to be adaptive, reactive, and distributed. Bio-inspired computing is a field devoted to tackling complex problems using computational methods modeled after design principles encountered in nature. This course is strongly grounded on the foundations of complex systems and theoretical biology. It aims at a deep understanding of the distributed architectures of natural complex systems, and how those can be used to produce informatics tools with enhanced robustness, scalability, flexibility and which can interface more effectively with humans. It is a multi-disciplinary field strongly based on biology, complexity, computer science, informatics, cognitive science, robotics, and cybernetics.