



The Ph.D. Course in Mathematical Models for Engineering, Electromagnetics and Nanosciences (MMIENS), based at the Department of

Basic and Applied Sciences for Engineering (SBAI), is aimed at preparing young graduated students to perform theoretical and applied research in the fields of mathematics, electromagnetics and material sciences. The most important aim of the curriculum in Mathematics for Engineering is *to provide an intense scientific and technological preparation and, at the same time, to provide young mathematicians an opening towards the problems coming from the productive world.* The Doctorate encourages theses concerning problems posed by an external entity, since an applied mathematician should be able to communicate with the productive and managerial world.



SIGMA CONSULTING was founded in 1998 and is a leader in the field of integrated systems with a high level of experience in the use of international civil and military standards. Specialized in ICT electronic systems, Hardware and Software for the avionics, naval and land sectors applied to Aerospace and Defense, Homeland Security and in IoT Solutions and Systems for Civil applications such as Smart Farming, Smart City, Telemedicine and Decision Support for Emergency Management. Sigma Consulting operates under an ISO 9001:2015 certified management system, is the leader and mandatory of the ATEN IS network (a group of companies composed of 47 high-tech companies, mainly located in Tecnopolo hub of Rome), and has long been at the forefront for successful actions and projects in the field of internationalization.



Giulia Dominijanni obtained her master's degree in Management Engineering at the University of Rome La Sapienza with a grade of 110/110 cum laude, discussing a thesis in combinatorial optimization about *"Graph coloring methods for frequency assignment problems"*. During her university studies, she participated in numerous training activities, including the Erasmus programme at the "Facultad de Ciencias Economicas Y Empresariales" at the Autonomous University of Madrid, which enabled her to study in depth topics such as Industrial Organisation, Advanced Microeconomics and Quality Management, as well as her knowledge of programming languages, including Python. In November 2021, she received the qualification to practice as an engineer in section A.



SMART FAI: SMART Farming with Artificial Intelligence The project aims at developing innovative AI techniques in the Smart Farming field. The main objectives include the development of advanced AI techniques to be implemented on monitoring systems composed of one or more drones for data acquisition and a remote service centre for processing the acquired data, as well as the study and development of advanced vision models to be implemented on the drone for speeding up and increasing the efficiency of various on-board functions. Those methodologies will make it possible to define innovative investigation tools that go beyond the usual investigation protocols and will contribute to increasing the company's competitiveness in terms of automating processing, reducing the complexity of early warning algorithms, and improving sensors and acquisition methods.