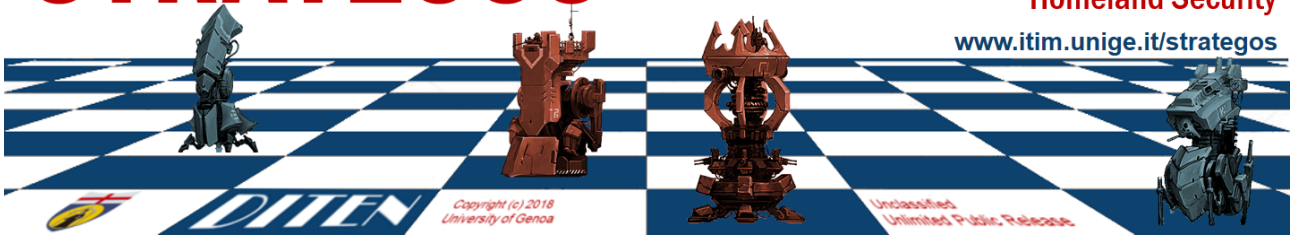


# STRATEGOS

Engineering Technologies for Strategy in  
Defense, Industry, Government &  
Homeland Security

[www.itim.unige.it/strategos](http://www.itim.unige.it/strategos)



**STRATEGOS**

*Master of Science on Modelling, Engineering and Strategies on Operations and Systems*

**Course: STRATEGIES FOR TELECOMMUNICATIONS**

*SSD ING-INF/03*

**Credits: 4**

**Tentative Schedule:**

*1<sup>st</sup> Year, Second Semester, Tentative Schedule 2 Lectures of 2 hours per week for 10 weeks to support Lectures, Class Exercises, Labs as well as Seminars*

**Teachers, Email, URL:**

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### ***Education Objectives:***

In these last few years enterprise strategic choices have been heavily influenced by a group of “changes” that have modified the operating context. One of the most important has been the “digitalization”. In practice, currently, every business is a digital one. Some digital technologies, listed in the aim, will have a special impact on future industrial strategies, allowing the development of smart cities, manufacturing, factory and agriculture. Having knowledge about these technologies, their use and application will be essential to make decisions in strategic environments.

### ***Major Aims***

The course is aimed at providing the know-how about advanced ICT technology that has or can have a deep impact on enterprise strategic choices, such as IoT – Internet of Things, 5G, Satellites, Automated and Connected Mobility, Cloud Computing, Big Data Analytics, Artificial Intelligence and Machine Learning, and Cybersecurity.

### ***Detailed Aims***

The lectures are aimed at providing theoretical and practical knowledge about advanced Information and Communication Technologies which will influence strategic choices in the next future allowing the development of new paradigms and services such as smart cities, manufacturing, factory and agriculture.

The lectures will provide a basic know-how about networking technologies such as IP and TCP/UDP architectures and will develop this information to explain concepts such as Cloud Computing and Internet of Things; 5G and Satellite Technology, Automated and Connected Mobility; Big Data Analytics, Artificial Intelligence and Machine Learning, and Cybersecurity.

### ***Course Program & Elements:***

***Prof.M.Marchese***

- **Basic networking technologies:** Structure of a telecommunications network. Definition of the structure at functional layers, definition of protocol, communication between remote systems. Internet structure. Ethernet. IP, TCP/UDP.
- **5G and Satellite Technologies:** basic and applications.
- **Cloud Computing and Internet of Things (IoT):** The concept of cloud computing, IoT definition, IoT devices, IoT protocols: commercial and standardized solutions, IoT architectures.

***Dr.M.Mongelli***

- **Automated and Connected Mobility, Big Data Analytics, Artificial Intelligence and Machine Learning: Overview of data analytics, feature extraction and machine learning; Rulex extraction method in machine learning; machine learning for the control of networks; machine learning for cybersecurity; machine learning for the control of vehicular networks; simulation and data analytics of Cyber-Physical Systems, such as automobiles, cars, and medical devices: definition of physical part and software parts; analysis of systems and impacts in terms of both performance and safety of humans and environment.**

***Dr.E.Cambiaso***

- **Cyber-attacks strategies: Introduction to cyber-attacks; relevant types of threats; underground network and introduction to darknets; cyber-physical attacks; the rationale behind a cyber-attack; who is the attacker and his aims; how a cyber-attack can be executed, comparison with real life threats (+ implicit personal organization strategies). Vulnerability assessment and penetration testing. Advanced cyber-attacks.**
- **IoT security: Introduction on IoT security aspects and protocols; Vulnerabilities on ZigBee.**

***Teaching Approach:***

***Lectures integrated by tutorials.***

***Evaluation and Final Exam:***

***Final Exam with the Teacher***

***Timetable:***

***TBF***

***Time Zone:***

***A, Genoa, Italy, GMT + 1 (solar time)***

***Prerequisites:***

***NA***

***References:***

- ***Notes on specific topics issued by the lecturer***
- ***Extracts of international regulatory and scientific documentation provided by the lecturer***