

**Name of the course:** Principles of Systems Engineering

**Teacher:** Vincenzo Arrichiello; e-mail: [vincenzo.arrichiello@gmail.com](mailto:vincenzo.arrichiello@gmail.com)

**Duration of the course:** 20 hours

**Credits:** 5

**Language:** Italian; in the presence of a request by foreign students, the course will be held in English.

**Aims of the course:** to provide an introduction of Systems Engineering, a systemic and systematic approach for the development of successful systems. Initially developed to cope with the complexities of early aerospace and defence programs, can now prove a useful tool to address the competing requirements and complex interactions (both internal and external) which today characterise most of the engineered products ("systems") along their complete life-cycle.

**Main topics covered:**

- Systems Engineering; a definition related to its historic origins and reasons of.
- The blending of systemic and systematic approaches in Systems Engineering
- The fundamental elements of del Systems Engineering
- Life-cycle and its stages (an introduction to)
- Systems Engineering technical processes (an introduction to)
- The decision process in the Systems Engineering practice
- Solutions' description and modelling (Model-based vs. Document-based, SysML)
- The Systems Engineer practitioner: competencies

**Exam modality:**

Written answers to open questions

**Bibliography:**

Notes provided by the teacher

INCOSE Systems Engineering Handbook 4th ed.

Further references to books and documents will be provided during the course