Università degli Studi di L'Aquila - Dipartimento di Ingegneria e Scienze dell'Informazione e Matematica

Course catalogue

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Programme of Course "Controlli Automatici"

- Code: I0029
- Type of course unit: Elective (Laurea in Ingegneria dell'Informazione curriculum Comune)
- Level of course unit: Undergraduate Degrees
- Semester: 1

Number of ects credits: (Laurea in Ingegneria dell'Informazione) 9 (workload 225 hours)

Teachers: Maria Domenica Di Benedetto

1	**Course objectives**	The objective of the course is introducing classical methods for the synthesis of linear controllers that are based on the frequency response and the time response of the process.
2	**Course content and learning outcomes (dublin descriptors)**	Topics of the module include: • Introduction to feedback control systems. Forward and feedback control. Fundamental properties of feedback control. Examples. Classification of systems. • Characteristics of single-input single output (SISO) feedback control systems. Steady-state response to polynomial and sinusoidal inputs and disturbances. Transient response of a feedback control system. Performance indices. • Frequency response design methods. Performance specifications in the frequency domain. Design of lead-lag compensators. PID controllers. • The Root locus method. The root locus procedure. Parameter design by the root locus method. Stabilization of linear systems by the root locus method. • Direct control design. Realizability of compensators and stability problems. • The design of state variable feedback systems. Full state feedback control design. Observer design. Integrated full-state feedback and observer. The separation principle. • Digital control systems. Sampled-data systems. Z-transform. Performace of sampled-data systems. Design of digital controllers. Dead-bit control.
3	**Course prerequisites**	Foundations of System Theory
4	**Teaching methodsand language**	Lectures and recitation sessions **Language**: Italian
5	**Assessment methods**	Written and oral exam