



AUTOMATION AND COMMUNICATION IN INDUSTRIAL SYSTEMS

Anno immatricolazione	2017/2018
Anno offerta	2018/2019
Normativa	DM270
SSD	ING-IND/32 (CONVERTITORI, MACCHINE E AZIONAMENTI ELETTRICI)
Dipartimento	DIPARTIMENTO DI INGEGNERIA INDUSTRIALE E DELL'INFORMAZIONE
Corso di studio	INDUSTRIAL AUTOMATION ENGINEERING - INGEGNERIA DELL'AUTOMAZIONE INDUSTRIALE
Curriculum	Robotics and Mechatronics
Anno di corso	2°
Periodo didattico	Primo Semestre (01/10/2018 - 18/01/2019)
Crediti	6
Ore	54 ore di attività frontale
Lingua insegnamento	English
Tipo esame	SCRITTO E ORALE CONGIUNTI
Docente	CANAZZA VIRGINIA (titolare) - 3 CFU CUZZOLI MAURIZIO - 3 CFU
Prerequisiti	Basics of Electrical systems
Obiettivi formativi	<p>The course introduces the student to the knowledge of the operation of the whole sale electricity market in Italy and the management of energy supplies for the industries in the free market. The course prepares the student to understand the objectives of energy policies and the problems related to the integration of renewables in electrical systems, and to deal with the management of energy purchases on the free market, starting from knowledge of the supply chain, from the production to the final meter, through the analyses of the Italian and European markets, from the regulatory point of view and of the most recent trends of the fundamentals, up to the billing and the quality of the</p>

	<p>electrical service . In the course will be treated also the management of natural gas supplies for the industries. The student, therefore, learns the key notions behind energy management, in particular related to energy supplies both from the technical and normative point of view.</p>
Programma e contenuti	<p>-Italian electrical system. Structure of the electrical supply: production, transmission, distribution and sale. Quality of the electrical service. Reactive energy. Structure of electrical billing. Analysis of the load curves. Energy eater.</p> <p>-Whole sale electricity markets. Fundamental notions to understand the dynamics of the electric market in Italy and the interrelations between its different phases. Specialized regulation analysis. Simulation approaches of the energy markets, critical analysis of the historical market results based on the elaboration of public data. Investment assessment. Logic of electrical system planning.</p> <p>-Risk Management, Traders strategies, sourcing and pricing. Commercial products. Types of traders: resellers, purchasing groups and consortia. Regulatory and contractual supply sector.</p> <p>-Natural gas supplies for the industries: structure and supply chain, products of floor Manager.</p>
Metodi didattici	<p>The course is based on frontal lectures.</p>
Testi di riferimento	<p>Reference texts are made available the Power point presentations with which are carried out</p> <p>The lessons, supplemented by scientific articles and other material, Provided by the teacher on the KIRO platform.</p> <p>F. Ilceto, Impianti Elettrici, vol. I, Pàtron ed., Bologna</p> <p>G.B Zorzoli, Stano mercato quello elettrico, Barbera Editore</p> <p>Delibere ARERA - CSEA</p> <p>P. Ranci, Economia dell'energia, Manuali, Il Mulino</p> <p>Relazioni annuali GME</p> <p>Piano di Sviluppo annuali di Terna</p> <p>Vademecum Borsa Elettrica Italiana del GME</p> <p>F. C. Schweppe at al., Spot pricing of electricity , Kluwer Academic Publishers (1988)</p> <p>G. Strbac et al. - Fundamentals of Power System Economics, John Wiley & Sons (2004)</p> <p>D. R. Biggar et al., The Economics of Electricity Markets, IEEE/Wiley (2014)</p> <p>ENTSOE, Survey on Ancillary services procurement, Balancing market design 2014 (2015)</p>
Modalità verifica apprendimento	<p>The exam is written and oral. It's an open discussion of one or more lesson topic.</p>
Altre informazioni	<p>---</p>
Obiettivi Agenda 2030 per lo sviluppo sostenibile	<p>\$lbl_legenda_sviluppo_sostenibile</p>