UNIVERSITÀ DI PAVIA

## Anno Accademico 2017/2018

# DESIGN OF ENTERPRISE SYSTEMS

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| **Anno immatricolazione** | 2016/2017 |
| **Anno offerta** | 2017/2018 |
| **Normativa** | DM270 |
| **SSD** | ING-INF/05 (SISTEMI DI ELABORAZIONE DELLE INFORMAZIONI) |
| **Dipartimento** | DIPARTIMENTO DI INGEGNERIA INDUSTRIALE E DELL'INFORMAZIONE |
| **Corso di studio** | COMPUTER ENGINEERING |
| **Curriculum** | Computer Science and Multimedia |
| **Anno di corso** | 2° |
| **Periodo didattico** | Primo Semestre (02/10/2017 - 19/01/2018) |
| **Crediti** | 6 |
| **Ore** | 56 ore di attività frontale |
| **Lingua insegnamento** | This course addresses Enterprise Systems (ES). ESs are the information tool of enterprises and build their nervous system. On one side, ESs support enterprise operations, and , on the other side, support the information needs of managers; they include 3 main classes, namely ERP, CRM, BI. ERP (Enterprise Resource Planning) systems support the operations, across the lifecycle of planning, executing, monitoring, and data management. The most important domain are manufacturing enterprises, where ERPs support purchasing operations and materials management, production, and distribution. Moreover, ERPs support also administrative tasks, such Accounting, Human Resource Management, etc. They stem from a long evolution. ERP platform are offered by large software vendors, like SAP and Oracle, as well as specialized companies; some Open Source ERPs are also on the market. CRM (Customer Relationship Management) systems support the whole lifecycle of customers,(marketing all contact, sale, after sale service, and analysis). CRMs interact with customers on a wide range of channels, such voice (call centers), web and chat, direct contact (presence). A typical CRM is made of a series of modules which are specialize by channel, and by a shared database, which stores data on customers, products, sales, salespersons etc. CRM software platforms are proposed by main software vendors, like Oracle and SAP, |

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| | and by emerging cloud oriented vendors, such as Salesforce.com, a company founded in 1999, with an increasing deployment on mobile devices. BI (Business Intelligence Systems) systems support the information analysis needs. Their typical architecture is layered. A first layer extracts data from enterprise, external or internet sources; a second layer transforms data; a third layers stores transformed data; a final layers processes data, for reporting, analysis, mining, decision making etc. BI systems are widely used for the governance of enterprises themselves, for marketing, quality control, performances analysis of business processes and of services, for customer profiling, for supplier evaluation .. Moreover, BI is used to extract knowledge from both enterprise and external information , e.g. on citizen commuting flows, on the health of population etc.. BI platforms are offered by numerous vendors, which include Open Source, CRM/ERP vendors like Oracle, SAP, specialized vendors etc. Her also, projects focus on a customization of existing platforms. A special BI case are Urban Analysis Systems that gather data by surveys, sensors, extraction; they are designed to enable both real-time and time trend analysis e.g. of traffic flows. A key component is the visual interface, which should display the dynamics observed –e.g. the traffic - within the context – e.g. the map of the city. |
| **Tipo esame** | SCRITTO E ORALE CONGIUNTI |
| **Docente** | MOTTA GIANMARIO PIERO ANTONIO (titolare) - 6 CFU |
| **Prerequisiti** | The course focuses on requirements analysis and on the ES architecture . Hence, an overall knowledge of business modeling/analysis techniques as UML, BPMN, ER (Entity Relationship) is highly recommended. Also a general knowledge on Software Engineering is required. |
| **Obiettivi formativi** | The course, after an overview on ES, focuses on BI systems and BI analysis techniques, which are rather peculiar. While CRM and ERP analysis is process-driven, BI analysis is information-driven. Specifically, we address analysis techniques for strategic requirements eliciting, conceptual modeling, logical modeling. At the end of the course students shall:<br>(d) Know the overall business architecture of Enterprise Systems<br>(e) Be able to model BI user requirements<br>(f) Be able to design a prototype on data analysis |
| **Programma e contenuti** | • ES domains: ES Front-end systems (Customer Relationship Management) Back End Systems (Enterprise Resource Planning), Management Support Systems (Business Intelligence / Decision Support Systems)<br>• Domain Analysis for Business Intelligence systems: Strategic Information Requirements Elicitation (SIRE), Performance Indicator Analysis (KPI, BSC)<br>• Conceptual analysis for Business Intelligence systems: Multidimensional Analysis of Information (DFM), ER Analysis, Goal Oriented Analysis<br>• Data Analysis for City Management : this module (2 CFU) will be |

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| | taught by professor Tuncer, SUTD (Singapore University of Technology and Design) |
| **Metodi didattici** | Most topics will be taught through a complete learning cycle that will be based on the sequence<br>• Lecture on foundations (stimulus) which is aimed at explaining “What it is”<br>• Case study / Exercise (reinforcement) which is aimed at showing “How it is made”<br>• Project work made by student teams which intends to let students learn “How to make it” |
| **Testi di riferimento** | • Italian students may use G. Bracchi, C. Francalanci, G. Motta (Eds.), Sistemi informativi d’impresa (= Enterprise Information Systems), McGraw-Hill, Milano 2009<br>• Journal Articles<br>• HBS case studies |
| **Modalità verifica apprendimento** | Evaluation will be based on<br>• 1/3 the project work – the mark is given to the student team<br>• 1/3 the individual presentation of the team project<br>• 1/3 the individual oral or written exam on foundations |
| **Altre informazioni** | Evaluation will be based on<br>• 1/3 the project work – the mark is given to the student team<br>• 1/3 the individual presentation of the team project<br>• 1/3 the individual oral or written exam on foundations |
| **Obiettivi Agenda 2030 per lo sviluppo sostenibile** | $lbl_legenda_sviluppo_sostenibile |