# Computer Science and Information Systems

## Prof. Fabrizio Massimo Ferrara

***COURSE AIMS AND INTENDED LEARNING OUTCOMES***

Nowadays companies, whose success depends on the effective use of ICT, need competent resources both in terms of technological knowledge and the impact of using new technologies on operational and strategic management.

The course lays the foundation for understanding the topics of technological innovation, information management, the Internet, digital business models, corporate information systems and their organisational and management implications.

With this objective, the various topics are covered without specific technological implementation, in order to provide students with long-term understanding and analytical skills, even in the face of a rapidly changing market.

At the end of the course, students will know:

* the fundamental aspects of technological evolution and how these have influenced and still influence the organisation of companies, markets and society in general;
* the role and the functions of the key elements of an IT system, not only inside companies, but also in terms of collaboration between different organisations, and interaction with users;
* how to examine with understanding the main organisational, information and functional requirements of a business, expressed through formalisms and standard models independent of specific technological implementations.
* and understand the methodology and a model to represent a data base and its conversion into a physical structure on a conceptual level (independently of technologies);
* the possibilities as well as the organisational, security, ethical and technological problems associated with the use of new solutions, and the role of standards in allowing collaboration between similar technological solutions;

***COURSE CONTENT***

1. Presentation of course and exam methods.

2. Introduction to the role of ICT (Information and Communication Technology) in the business world and as a fundamental and strategic component for thecontrol of the organisation and the implementation of its processes.

3. ICT and digital convergence: technological innovation and the evolution of processing systems and communication networks in the information society; the importance of the models used for the representationof standards to ensure the overall coherence of the system, the integration of different technologies and continuity in innovation.

4. ICT “megatrend”: mobile, internet of things, social, big-data, cloud computing

5. ICT and management of information assets: the Entity-Relationship model for the conceptual representation of data and conversion and management criteria in a physical context, using Microsoft Excel as an example.

6. ICT and knowledge management: business intelligence and management of data for researching and processing information to support operational and decision-making activities.

7. ICT and security: fundamental principles of information security and the protection of personal data according to EU Regulation 2016/679.

8. ICT and digital markets: Internet, e-business, corporate networks and business change.

9. ICT and management of company information systems: evolution of information systems and corporate structures to support the operational and strategic needs of companies, with a special focus on the healthcare scenario, as foreseen by the evolution guidelines defined by the PNRR

10. Seminar by an external speaker on the use of new technologies in telemedicine.

***READING LIST***

J. Valacich-C. Schneider-A. Carignani-A. Longo-L. Negri, *Tecnologie e innovazione nei mercati digitali. Ict e sistemi informativi aziendali,* Pearson Italia, 2015.

Articles and case studies relevant to the topics covered will be published on Blackboard.

Each lecture will be supported with detailed slides which will be published on Blackboard. The topics covered in the slides are fundamentals and compulsory for exam purposes.

***TEACHING METHOD***

Frontal teaching. The introduction of the topics will be supported by the presentation and discussion of case studies.

Once per month, students will be invited to join a discussion over the topics explained during the prevuious lectures, in order to assess their knowledge and understanding of the course content.

Furthermore, during the course, a subject matter expert will be invited in class in order to discuss about the use of new technologies in the healthcare industry.

In addition, students will have the opportunity to carry out a group activity in collaboration with the Business Economics course, in which they will be asked to analyse the IT and organisational profile of a clinic where the visits are guaranteed through the introduction of a model based on telemedicine.

Finally, they will be invited to attend an optional webinar on the GDPR, held by an official of the Italian Data Protection Authority.

Class attendance is highly recommended, in order to allow students to receive further information of the study method suggested by the lecturer, discuss useful examples and case studies, and carry out in-depth analysis of the topics explained during the course.

***ASSESSMENT METHOD AND CRITERIA***

The final exam aims to assess the knowledge of the topics explained in class, with a focus on the possibilities offered by the use and the evolution of technologies within companies.

It will be structured as a written individual test (duration 2 hours), consisting in a written assignment based on the discussion of six of the topics explained in class. Further information will be made available in the guidelines for the test. One question will be on the definition of a conceptual model of data bases and its conversion to a physical structure using Excel.

A maximum of 30 points will be assigned to each question, the result will be the average of the marks of the individual questions.

It is not foreseen an intermediate test.

***NOTES AND PREREQUISITES***

Attendance at and active participation in lectures is recommended.

The course does not require prior knowledge in the field of technology or IT.