# Internet Technologies and Smart Working

## Prof. Federico Accetta; Prof. Donatella Pinto

### COURSE AIMS AND INTENDED LEARNING OUTCOMES

The strong and quick development of digital technologies requires professional profiles capable of operating in the new economic and business context, stemmed from the fourth industrial revolution.

In this context the course aims to pursue two macro objectives addressed in two modules

The first module focuses on an introduction to cloud computing solutions and emerging trends in the technology landscape by providing both basic cloud computing programming capabilities and hands-on experience on a real cloud infrastructure. In addition, the students will be introduced to cloud-based solutions for natural language processing with an overview on popular use cases.

In order to understand how projects with a strong component of innovation / experimentation can be managed and governed, agile and extreme programming concepts/best practices will be investigated during the second module.

At the end of the first module of the course students will be able to:

1. have a basic understanding of the different technologies and capabilities that can be leveraged in a cloud environment
2. understand the pros and cons of each scenario, alongside a working knowledge of the most popular development tools and phases of a development project.

The second module is about the achievement of an in-depth knowledge related to organizational contexts characterized by digital transformation, , strong relationships, high integrated processes, innovation oriented internal and external pressures, and the development of creative skills and empathic ability as well flexibility and openness of thought, seeking to acquire reflexive and critical thinking.

In details the aims of the module are as follows:

* to understand the importance of *human factors & work organizational psychology* into the digital transformation.
* to acquire the main *methodologies & tools* for digital innovation in the company with a special focus on needs & requirements collection.
* to experience a *proposal development* for digital innovation, addressing specifically the practical, social and institutional implications.

At the end of the second module the students will be able to:

1. Use a basic glossary about the psychological drivers embedded in the innovative technological contexts.
2. Use self and peer-evaluation tools for assessing the more relevant digital competencies.
3. Define and articulate a project draft related to specific organizational needs.
4. Acknowledge clues and cues of the workplace needs embedded in specific organizational environments.

### COURSE CONTENT

**Module 1**:

* Introduction to Cloud Computing
* Service models on Cloud: IaaS, PaaS and SaaS
* Cloud services: Storage, Infrastructure, Computing, Data, etc.
* Cloud native development
* Microservices
* Containers and orchestration (Kubernetes)
* Hands-on experiences on cloud infrastructures (create and develop applications and services deployment)
* Development lifecycle: waterfall and agile methodologies applied to technical projects
* Tools and resources on the cloud for data science projects

**Module 2**:

*Smart working in a digital scenario*

* Organizational change and new way of working: the agile work and its features
* Digital transformation & human factors in technology evolution.
* How to detect new competencies in recruitment and development process: assessment exercise.

 *Organizational* *needs* & *requirements* *collection* *for* *digital* *innovation*

* Theories method & tools for digital innovation in the organization.
* Function owner: needs & requirements collection.
* Develop a proposal for a digital innovation in a Company function.
* Presentation of the project.

### READING LIST

During the course instructors will provide link to public available online material and textbook references.

### TEACHING METHOD

The module 1 will include lectures and class exercises based on traditional teaching and teach by example principles. It is strongly advised to attend lectures for working on case studies and examples, and for revising materials. The module also involves hands-on activities with a cloud based integrated environment.

The module 2 is highly interactive and includes use of case studies, assessment meeting with company’s manager, exercises (including on the field observation of technological campus) and frontal lessons.

### ASSESSMENT METHOD AND CRITERIA

At the end of each module there will be a mid-term exam. The final exam score is the average score of Module 1 and 2 results.

The exam of Module 1 consists of a series of open-ended questions and students will be also asked to produce an essay on a topic related to the course.

The exam of Module 2 consists of Questionnaire made by open and multiple-choice question related to the topic of the course (60%) and Observation, with an evaluation grid, on the presentation of the project work (40%).

If the students don’t attend the project or the presentation, there will be an interview on the content of the training.

The evaluation criteria will focus on the acquisition of the basic content, on the ability to process and to connect between the contents proposed in the learning process and the material acquired during the interaction with the firm. For non-attending students, the criteria will concern the acquisition of basic contents and their critical analysis and elaboration, with associations and connections between the various contents, referring to the reading list adopted.

The final mark, expressed in thirtieths, will evaluate the above knowledge and skills according to the following ranges: - incomplete or insufficient knowledge and skills:

### NOTES AND PREREQUISITES

***Prerequisites:*** Knowledge of the basic principles of computer operation and of the Internet is required. Basic programming skills and a basic knowledge of Python programming language is required.

***Day and reception hours:*** Students can contact the instructor by e-mail to arrange for day and reception hours.