# Web Applications Technologies

## Prof. Emanuele Goldoni

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

*Course Aims*

Provide an overview on technologies, paradigms and languages for developing web applications. The aim is to give the student a basic knowledge for developing fully-functioning web applications, integrating server- and client-side technologies and connecting them.

*Intentend Learning Outcomes*

At the end of the course, students will be able to carry out the general design and development of a web-based application. They will know the main protocols and technologies for application development, both server- and client-side, as well as the formats for data exchange. Students will also be able to distinguish the strengths and weaknesses of each available technology and usable standards, identifying the stack and development environment, the libraries, and the best technologies to undertake the development of the web application according to the available budget and the technological and functional requirements.

***COURSE CONTENT***

* An introduction to web applications design and development.
* Pragmatic aspects of development: use of containers, version control of sources (git), and team development methodologies (e.g. Agile).
* Markup languages (XML HTML, markdown), data-interchange formats (JSON), character set and encoding.
* HTTP Protocol.
* Web Services and actions on a REST resource.
* Authentication, Authorization and Accounting.
* Client-side development: HTML5 (elements, DOM, Canvas and SVG), CSS3, JavaScript, hints to some frameworks (jQuery, Bootstrap).
* Server-side programming: introduction to PHP (stack LAMP) and JavaScript server-side (NodeJS).
* Ajax and Web Sockets for client-server communication.
* Security in web applications.
* Web Accessibility

***READING LIST***

Lecture notes and material freely available online

***TEACHING METHOD***

Lectures, lab projects under professor’s guidance, individual projects revision.

***ASSESSMENT METHOD AND CRITERIA***

Students' knowledge and acquired skills will be assessed by:

1. an individual project.

2. a written exam with 6 open-ended questions; before taking the exam, students are requested to send to the instructor a copy of the project.

For the web application development project, agreed in advance with the lecturer, delivery of all the developed code and project documentation is expected. During the presentation of the project, students' ability to adopt the most coherent design and technological solutions among those proposed during the course, functionality of the developed application, readability of the code, clarity and completeness of supporting documentation, and ability to argue and defend the choices made will be assessed.

The written examination lasts 90 minutes and will test the knowldege of the students on the theoretical aspects of the course and the working mechanisms of the technologies presented during the course. The relevance of the answers, the appropriate use of specific terminology and the coherent structuring of the exposition will contribute to the assessment.

The maximum achievable mark for the written exam is 20/30, which will be integrated with the mark obtained for the individual project (from 0 to 10 points) to obtain a a unique final mark, which can range from 18/30 to 30/30. Full marks cum laude will be attributed to outstanding cases in which the student demostrates a clear independence in the application of the concepts learned by finding and developing solutions for project in a personal and original way.

***NOTES AND PREREQUISITES***

As the course is introductory in nature, there are no prerequisites for attending it. However, a basic knowledge of at least one programming language is assumed.

*Further information can be found on the lecturer's webpage at http://docenti.unicatt.it/web/searchByName.do?language=ENG or on the Faculty notice board.*