UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Web Tools and Applications

2425-1-F9201P221-F9201P220M

Aims

The educational objectives of this teaching are practical-applicative and conceptual-theoretical in nature.

Knowledge and understanding

This course aims to provide knowledge and skills in the field of the main tools and technologies that underpin the development of web applications. An overview will be given, starting from the invention of the Internet and then the Web, leading up to the most recent developments. Technological aspects will be introduced and gradually deepened to enable a conscious use of web tools, as well as appropriate individual-level exploration. The focus will be on functional and usage aspects, as well as some market dynamics of the web ecosystem. Furthermore, the characteristics of the most popular social media platforms and recent developments in the "social" and "mobile web" will be explored.

Ability to apply knowledge and understanding

- Use of core Web applications and services, social media
- Use of WordPress and main plugins for creating a thematic blog
- Use (at entry-level) of automation tools, data analysis tools, infographic generation

Contents

The following topics will be covered in this course: computer networks and network protocols (basic concepts, local networks, wide-area networks, the Internet); the Web, its standards, and web languages (difference between Internet and Web, the graph structure of the Web, static Web/dynamic Web, semantic Web, major languages); web browsers, their history, and their main features; major web services and applications; social media (and social web); the issue of privacy and data security on the Web; current tools for creating online content (blogs, content management systems, automation tools, data analysis tools, infographic generation tools).

Detailed program

Introduction to computer networks and network protocols

- Basic concepts
- Local area networks
- Geographic networks
- The Internet
- Networking protocols
- The Web and Introduction to its Standards

The Web and introduction to its standards

- Difference between the Internet and the Web
- The graph structure of the Web
- Static Web/Dynamic Web (and paradigms Web 1.0, Web 2.0)
- Semantic Web (Web 3.0 paradigm)
- Social Web

Security and confidentiality on the Web

- Cryptography
- Cookies
- Malware
- Proxies
- Referral links

Web browsers, history and role

- Introduction
- Interfaces
- Evolution
- Impact

Introduction to technologies and languages for generating Web applications

- HTML
- CSS
- DOM
- Wordpress

Natural Language Processing and the Web

- Introduction to NLP and basic concepts of textual representation
- Sentiment analysis

The access to information

- Search engines
- Recommender systems

Hints of SEO, Digital Marketing, and Digital Economy

- Optimization of On-Page and Off-Page Content
- Some Tools for SEO

Social media

- Introduction
- Graph theory
- Complex network theory
- Social Network Analysis metrics

Prerequisites

The course assumes that the students have a certain familiarity with main web access tools (browsers and search engines). It is also useful some level of experience with the most diffused social media (Facebook, Twitter, Youtube).

Teaching form

The type of teaching activity is partitioned between lectures and laboratory. The didactic mode of theoretical lectures consists of 21 in-person lecture-based classes of 2 hours each one and 8 in-person laboratory interactive classes of 3 hours each one.

Theoretical and methodological aspects will be presented along with practical examples and case studies, employed to exemplify the introduced topics. The course has a partly laboratory approach: students are asked to experiment several online applications, among the most diffused, and to build a personal presence on different social media.

Textbook and teaching resource

Slides of the frontal lessons, including links to additional suggested material (papers, articles, blogs).

Semester

First semester

Assessment method

The learning evaluation will be through a written test, containing both open-ended questions and closed-ended tests. A project consisting of a thematic Web blog created in groups (2-max 3 people) is also due.
There are no ongoing tests.

The assessment of the written exam, which will focus on the topics covered during the lectures, will be in thirtieths;

The assessment of the website is group-based, and will be in thirtieths. In particular:

- There will be an assessment part, related to the Web Tools and Applications module, which will consider the aspects of the website related to the topics covered during the Labs of that module;
- There will be an assessment part, relating to the Principles of Social Psychology for Web Design module, which will consider aspects of the site relating to the topics covered during that module.
- The overall assessment, in thirtieths, will be an average of the mark obtained in the written exam and the overall mark obtained for the thematic website.

The examination and assessment procedures will be explained in detail during the first lesson of the Web Tools and Applications course.

Office hours

By appointment

Sustainable Development Goals