



Programme of Course "Open Data And Web Services"

- Code: DT0348
- Type of course unit: Compulsory (Master Degree in Applied Data Science curriculum Data for Smart City), Compulsory (Master Degree in Applied Data Science curriculum Data for Life Science)
- Level of course unit: Postgraduate Degrees
- Semester: 2

Number of ects credits: (Master Degree in Applied Data Science) 6 (workload 150 hours)

Teachers: Marco Autili (marco.autili@univaq.it), Alexander Perucci (alexander.perucci@univaq.it)

|   |  |  |
|---|--|--|
| 1 | <b>Course objectives</b>   | Open Data (OD) is the idea that some digital data should be freely available to everyone with legal and technical characteristics to enable them to be freely (re)used and republished, without particular restrictions from copyright, patents or other mechanisms of control. These data have the power to improve education, to build better cities, to generate new careers, to improve business practices, and so on. Therefore, services-oriented applications can built for exploiting, manipulating and integrating OD, for example, facilitating user's needs a city map app might uses open transport data to make people's daily travel easier substantially reducing traffic congestion and improving the mobility. Service-oriented Architecture (SOA) is an architectural style for building distributed applications using Web Services (WS). The objective of this course is to aim at deepening the understanding of key aspects and principles of OD, SOA and WS technologies, as well as related Software Engineering methodologies.  |
| 2 | <b>Course content and learning outcomes (dublin descriptors)</b> | <p>Topics of the module include:</p> <ul style="list-style-type: none"> <li>• Concept of Open Data and Linked Open Data</li> <li>• Open Data licensing, quality and formats</li> <li>• Data Cleaning</li> <li>• Notions and principles of Web Services</li> <li>• Notions and principles of Web Service standards</li> <li>• Notions and principles of Service-oriented Architecture</li> </ul> <p>On successful completion of this module, the student should :</p> <ul style="list-style-type: none"> <li>• have knowledge of the notions of Open Data as freely available data that can be (re)used and republished, without particular restrictions;</li> <li>• have knowledge of the types of licenses that suit Open Data;</li> <li>• have knowledge of the right data format used for Open Data and how the format impacts on the quality of Open Data;</li> <li>• understand key issues and challenges related to Open Data today;</li> <li>• have knowledge of the notions of Web Services, Web Service standards, and Service-oriented Architecture (SOA);</li> <li>• understand the Service-oriented Architecture principles and the related engineering development processes;</li> <li>• understand the notion of service composition as a means for developing complex service-oriented applications capable of manipulating and integrating Open Data.</li> </ul> |
| 3 | <b>Course prerequisites</b>                                      | Object-oriented programming, XML basics.   |
| 4 | <b>Teaching methods and language</b>                             | <p>Lectures and practical exercises</p> <p><b>Language:</b> English</p> <p><b>Reference textbooks</b></p> <ul style="list-style-type: none"> <li>• Ian Sommerville, <i>Software Engineering</i>. (vol. 10th Edition) 2016.</li> <li>• Rob Kitchin, <i>The Data Revolution Big Data, Open Data, Data Infrastructures and Their Consequences</i>. 2014.</li> <li>• Michael P. Papazoglou, <i>Web Services &amp; SOA, Principles and Technology</i>. (vol. 2nd Edition) 2012.</li> </ul>  |
| 5 | <b>Assessment methods</b>  | Either, students will be asked multiple-choice questions distributed appropriately across the course contents; or, students will be asked to design a service-oriented system  |

|  |  |
|--|--|
|  | capable of manipulating and integrating Open Data. |
|--|--|