



### Programme of Course "Programming For Data Science"

- Code: DT0336
- 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: 1

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

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<b>1</b>	<b>Course objectives</b>	
<b>2</b>	<b>Course content and learning outcomes (dublin descriptors)</b>	<p>Topics of the module include:</p> <ul style="list-style-type: none"> <li>• Introductory concepts of computer science: introduction to architectures (hardware, software), operating systems, logic computation, algorithm and complexity.</li> <li>• Syntax and semantics: definitions and examples in Python. Basic python elements: expressions, variables, assignments, numeric types and strings. Control commands.</li> <li>• Functions, scope of variables and abstraction. Recursion, file management.</li> <li>• Python Structured types: lists, sequences, tuples, dictionaries. Testing and debugging, Exceptions and assertions.</li> <li>• Object-oriented Paradigm: Python classes and objects. Data plotting with Matplotlib</li> <li>• Complexity. Simple algorithms on data structures. knapsack problem. Dynamic programming.</li> </ul>
<b>3</b>	<b>Course prerequisites</b>	
<b>4</b>	<b>Teaching methods and language</b>	<p><b>Language:</b> English</p> <p><b>Reference textbooks</b></p> <ul style="list-style-type: none"> <li>• John V. Guttag, <i>Introduction to Computation and Programming Using Python. Revised and expanded Edition</i>. MIT Press. 2013.</li> </ul>
<b>5</b>	<b>Assessment methods</b>	