| **MODELLO D (inglese)** | |
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| General Information | |
| Academic subject | Computational Intelligence |
| Degree course | Computer Science (LM18) |
| Curriculum | Knowledge Engineering and Machine Intelligence |
| ECTS credits | 6 |
| Compulsory attendance | No |
| Language | English |

| Subject teacher | Name Surname | Mail address | SSD |
|---|---|---|---|
| | Giovanna Castellano | giovanna.castellano@uniba.it | INF01 |

| ECTS credits details | | | |
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| Lectures | 4 credits | 32 hours | |
| Exercises | 1 credit | 15 hours | |
| Student Project | 1 credit | | |

| Class schedule | |
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| Period | 1st semester |
| Year | 2nd |
| Type of class | Lecture- workshops |

| Time management | |
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| Hours | 47 |
| Hours of lectures | 32 |
| Tutorials and lab | 15 |

| Academic calendar | |
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| Class begins | Sept. 24th, 2018 |
| Class ends | Jan. 11th, 2019 |

| Syllabus | |
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| Prerequisites/requirements | None.<br>Students having attended the Artificial Intelligence class in the first year of the level degree may have some advantage. |
| Expected learning outcomes (according to Dublin Descriptors) (it is recommended that they are congruent with the learning outcomes contained in A4a, A4b, A4c tables of the SUA-CdS) | *Knowledge and understanding*<br>The students will know the foundations, the main tasks and the main approaches to Computational Intelligence, with particular focus on Soft Computing.<br><br>*Applying knowledge and understanding*<br>The students will be able to apply Computational Intelligence techniques to specific problems in different interdisciplinary areas, to properly set up the techniques for fruitful application, and to set up evaluation experiments.<br><br>*Making informed judgements and choices*<br>The students will be able to compare different Computational Intelligence techniques, and to choose those that are appropriate to tackle specific problems. They will also be able evaluate the experimental outcomes and to trace them to the features of the evaluated technique.<br><br>*Communicating knowledge and understanding*<br>The students will be able to work in team, bringing to bear |

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| | their knowledge of Computational Intelligence in order to carry out fruitful cooperation with other kinds of expertise from other members of the team.<br><br>*Capacities to continue learning*<br>The students will be provided with methodological foundations that will allow them to understand the latest developments of Computational Intelligence. The lectures will make use of recent scientific papers and authoritative websites that will enable the students to stay up-to-date with advances in Computational Intelligence. |
| Contents | • Introduction to Computational Intelligence<br>• Predictive modeling: classification and regression<br>• Supervised and unsupervised learning<br>• Neural Networks<br>• Fuzzy Systems<br>• Fuzzy clustering<br>• Genetic Algorithms<br>• Computational Intelligence hybrid systems |
| Course program | |
| Bibliography | J.M. Keller, D. Liu, D.B. Fogel, "Fundamentals of Computational Intelligence - Neural Networks, Fuzzy Systems, and Evolutionary Computation. IEEE Press, Wiley, 2016. |
| Notes | When necessary, the teacher will provide the students with supplemental material. |
| Teaching methods | Lectures, exercises in the classroom |
| Assessment methods (indicate at least the type written, oral, other) | Oral test, requiring previous submission (no later than a week before) of a case study. |
| Evaluation criteria (Explain for each expected learning outcome what a student has to know, or is able to do, and how many levels of achievement there are. | 1. Ability to identify the appropriate methods of Computational Intelligence to approach a problem<br>2. Ability to apply a suitable Computational Intelligence method to solve a problem in a specific applicative scenario. |
| Further information | |