

## PHD PROGRAMME IN **COMPUTER SCIENCE AND MATHEMATICS**

Subject area CUN: 01 Mathematics and Computer Science, 09 Industrial and information Engineering

Coordinator: Prof. Maria Francesca COSTABILE

Administrative office: Dipartimento di Informatica - University of Bari Aldo Moro

Number of positions available: 8

- 6 with scholarships funded by the University; 2 of these have a priority for graduates from foreign Universities.
- 2 positions with a “higher education apprenticeship contract” for graduates under the age of 30. The contract is established with Exprivia S.p.A, an enterprise whose main location is in Molfetta (BA), on topics related to the two research profiles (R1 and R2) illustrated below:

### **R1. Software Models and Architectures for Smart Data Analytics**

The diffusion of digital technologies in every area of everyday life and the use of heterogeneous data in large and always increasing quantities is a fact. The research to develop within this PhD focuses on the analysis of new reference models that are being imposed both at organizational and technological levels, inspired to the concept of Smart Cities and Communities. Moreover, it will study new logical and architectural paradigms as well as tools to implement "Smart Data Analytics", useful for integrating and analyzing available and emerging data from diversified sources, sensors, open-data and social networks, with the ultimate aim of supporting the decision making, administrative and governance processes of a digital city.

### **R2. Cyber Security in Complex Systems**

Almost all of the services provided nowadays, both in private and public sectors, such as welfare services, are the result of interaction of complex systems intended as the set of organizational structures, processes, people, and infrastructures. The delivery of these services has more and more involved cyberspace, the set of networks, protocols as well as heterogeneous and interconnected IT applications that surround us. Managing this growing risk requires an appropriate organizational approach, processes and techniques, even in consideration of the introduction of the European GDPR legislation (General Data Protection Regulation - EU Regulation 2016/679), which imposes particular attention when identifying and protecting data that companies possess in order to protect the sensitive information of European citizens. There is an urgent need to develop solutions that allow to collect, standardize and make all the information useful to “threat intelligence” activities accessible. The research to develop during this PhD will focus on "Cyber Security in Complex Systems", which will be analyzed along multiple dimensions such as organization, processes and tools. Particular attention will be given to “threat intelligence” in order to create new models and defensive technologies.

Duration: 3 years

Curricula:

1. Computer Science (Scientific Subject Code: INF/01, ING-INF/05)
2. Mathematics (Scientific Subject Code: MAT/03, MAT/05 e MAT/08)

**Admission procedure**

### Ordinary positions, including the 2 with apprenticeship contracts

Candidates will be evaluated on the basis of: a) the documents presented with the application, b) a written exam, c) an oral exam that will also include the assessment of the candidate's knowledge of English.

As regards the applicants to the 2 positions with an apprenticeship contract, during the oral exam the Committee will also ask questions about the research topics described in R1 and R2 above, with the aim of assessing the eligibility to each position.

The available positions will be assigned according to the ranking obtained by the candidates, until all positions are covered and by taking into account the reserved positions.

#### *Admission exam dates, time and place:*

Written exam: 26<sup>th</sup> September 2017 at 03:00 p.m., *Room Hume – Dipartimento di Informatica – 2<sup>nd</sup> floor*

Oral exam: 28<sup>th</sup> September 2017 at 03:00 p.m., *Room Consiglio – Dipartimento di Informatica – 7<sup>th</sup> floor*

*Address: Dipartimento di Informatica – Campus Universitario – Via Orabona, 4 – 70 125 Bari, Italy*

Foreign candidates applying for ordinary positions can choose Italian or English language for their admission exam.

### Positions reserved to graduates from foreign Universities

The selection process is made up of two rounds:

- 1) from all applicants, a first pool will be selected based on the documents presented with the application;
- 2) the selected candidates will be interviewed and, among other things, they will discuss a research project (written in English, max 500 words) presented with the application. The interview, which will be in English or Italian depending on the candidate's choice, can be conducted via Skype and the candidate has to provide a Skype ID in the application.

The results of the interview will be combined with the evaluation of the application documents to create a ranking. In case the 2 scholarships will not be assigned to graduates from foreign Universities, they will be awarded to the next students in the ranking of ordinary positions.

*Interview date: 27<sup>th</sup> September 2017, the exact time will be communicated via email to the candidate.*

For more information, see <http://dottorato.di.uniba.it/nuovo/>