



UNIONE EUROPEA
Fondo Sociale Europeo



Università degli Studi di Cagliari

PhD Programme in MATHEMATICS AND COMPUTER SCIENCE Curriculum 1: MATHEMATICS Curriculum 2: COMPUTER SCIENCE Curriculum 3: BIG DATA	
DISCIPLINARY SCIENTIFIC AREAS	01 - MATHEMATICS AND INFORMATICS; 13a – ECONOMICS AND STATISTICS
COORDINATOR	PROF. MICHELE MARCHESI
HEAD DEPARTMENT	DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
DURATION	3 YEARS
LEARNING OUTCOMES AND RESEARCH TOPICS	<p>The PhD programme in Mathematics and Computer Science covers a broad spectrum of disciplines, connected to each other on the cultural, methodological and applicative levels. The doctorate, through the practice of scientific research in leading sectors of Mathematics and Computer Science, aims to train people of an adequate cultural level, able to contribute to the current needs of innovation and development of the industry and the information society, both on the level of scientific creativity, and of design ability. In particular, the doctoral course is aimed at training specialists with advanced methodological and technical knowledge, as well as with adequate linguistic preparation. The doctoral activity is supported by professors and researchers belonging to groups actively engaged in research at international level, ensuring ample opportunities for exchange of doctoral students with prestigious Italian and foreign universities, research bodies and companies. The investigation themes offered by the three available curricula (Mathematics, Computer Science and Big Data) largely refer to the research activities of the members of the teaching staff, and concern both the fundamental and application aspects of many sectors of Mathematics and Information Technology. The training acquired during the PhD programme will allow our graduates to autonomously perform research and development in universities, in public and private research institutions, and in the industrial sector. In particular, the main employment opportunities envisaged are the continuation of university research activities, the coordination and direction of research and development activities in industries, public bodies or national and international research centers. The analysis and elaboration skills acquired by training through research will also allow to take paths leading to managerial tasks in both the private and public sectors, or to undertake your own activities as a consultant for public bodies, companies and software houses.</p>
ELIGIBILITY AND OTHER REQUIREMENTS FOR CANDIDATES (ART. 2 - NOTICE OF COMPETITION)	EVERY ITALIAN 2ND CYCLE DEGREE (<i>LAUREA MAGISTRALE/SPECIALISTICA/VECCHIO ORDINAMENTO</i>) AND EQUIVALENT AND SUITABLE FOREIGN ACADEMIC DEGREES
ADMISSION TESTS	ASSESSMENT OF QUALIFICATIONS AND CURRICULUM VITAE, AND



	<p>VIDEO CONFERENCE INTERVIEW.</p> <p>During the interview, the candidate will discuss his/her 3-year research project. The project (preferably written in English) must be uploaded along with the documents listed in art. 3 of the PhD notice of competition (<i>Annex A “Titoli valutabili e Curriculum Vitae”; Annex B Dichiarazione sostitutiva di certificazioni del/i titolo/i di accesso con esami e voti”; two-sided coloured scanned copy of a valid ID, with a clear photo</i>), within the deadline (file name: progetto_di_ricerca_surname_name - formatting requirements: min. 8,000 max 16,000 characters including spaces - excluding title, schemes, charts and bibliographic references). The project will be evaluated during the interview exclusively and must include:</p> <ol style="list-style-type: none"> i) purpose of the proposed research project and the related curriculum; ii) state of the art of research; iii) detailed workplan; iv) expected results; v) motivation letter, i.e. max. 1,000 characters (including spaces) explaining the reasons prompting the candidate to apply for the PhD Programme. <p>The interview will be <u>mainly in English</u> and will:</p> <ul style="list-style-type: none"> - verify the candidate’s capacity of orientating among the main study fields of the PhD programme; - assess the candidate’s methodological knowledge and his/her analytical, elaboration and communicative skills; - discuss with the Selection Committee the content of the research project.
<p>ADMISSION TESTS FOR FOREIGN CANDIDATES APPLYING FOR RESERVED POSITIONS SUPPORTED BY A SCHOLARSHIP</p>	<p>ASSESSMENT OF QUALIFICATIONS AND CV, VIDEO CONFERENCE INTERVIEW</p> <p>During the interview, the candidate will discuss his/her 3-year research project. The project (preferably written in English) must be uploaded along with the documents listed in art. 3 of the PhD notice of competition (<i>certificate attesting the award of a 2nd level foreign degree needed to access a PhD programme, including exams and marks, with a translation in Italian or English; certificate attesting the award of a 1st level foreign degree, including and marks, with a translation in Italian or English; signed Curriculum Vitae preferably in EU format, in English or Italian; up to 3 reference letter(s), in English or Italian, on institutional letterhead paper, dated and signed by a university professor or expert in the PhD scientific area(s), following the prescriptions of each annex; additional qualifications, certifications, publications (up to 5) and work experiences, detailed in English or in Italian; two-sided coloured scanned copy of a valid ID, with a clear photo</i>), within the deadline (file name: progetto_di_ricerca_surname_name - formatting requirements: min. 8,000 max 16,000 characters including spaces - excluding title, schemes, charts and bibliographic references). The project will be evaluated during the interview exclusively and must include:</p> <ol style="list-style-type: none"> i) purpose of the proposed research project and the related curriculum; ii) state of the art of research; iii) detailed workplan; iv) expected results; v) motivation letter, i.e. max. 1,000 characters (including



	<p>spaces) explaining the reasons prompting the candidate to apply for the PhD Programme.</p> <p>The interview will be <u>in English</u> and will:</p> <ul style="list-style-type: none"> - verify the candidate's capacity of orientating among the main study fields of the PhD programme; - assess the candidate's methodological knowledge and his/her analytical, elaboration and communicative skills; - discuss with the Selection Committee the content of the research project. <p>Reference letters must be written in English, using the form available on the webpage https://unica.it/dottoratiricerca (How to apply for PhD selection: Guidelines and forms- Annex C), by a university professor or an expert in the research fields of the PhD programme, on letterhead of their institution, dated and signed. Evaluators will send their letters directly to the email address phdcall_referenceletter@unica.it (object: surname and name of the candidate being evaluated and name of the PhD programme for which he/she is applying).</p>
POSITIONS	8
SCHOLARSHIPS	<p>2 FUNDED BY MUR "2019-2020 PLANNING EX ART. 1 D.M. N. 435/2020 STATE UNIVERSITIES"</p> <p>2 FUNDED BY MUR PL, 1 OF WHICH RESERVED FOR FOREIGN CANDIDATES HOLDING A FOREIGN DEGREE</p> <p>2 FUNDED BY THE DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE:</p> <p>-FUNDS FROM RICDIP_RECSYS_2019_FENU, research topic "<i>Analysis and development of recommender systems</i>" - REFERENCE PERSON Prof. Gianni Fenu;</p> <p>-FUNDS FROM RICDIP_2019_DI_FRANCESCO RICRAS_2013_CARTA_01, RICRAS_CTC_2019_CARTA_01, RICFPQ_CTC_2018_REFORGIATO_RECUPERO, RICPON_CTC_2019_TONELLI + RICPON_CTC_2019_TONELLI, research topic "<i>Transformational Deep Learning Techniques for Event Detection and Time Series Forecasting</i>" - REFERENCE PERSON Prof. Salvatore Carta.</p> <p>The recipients for those scholarships which are related to a specific topic will be selected among the candidates who will gain a suitable position in the ranking lists for the admission to the PhD programme, as well as a positive assessment as regards the adequacy of his/her CV to develop the specific topic.</p>
POSITIONS WITHOUT SCHOLARSHIP	2
REFERENCE PERSON	<p>PROF. MICHELE MARCHESI</p> <p>EMAIL: marchesi@unica.it - TEL. +39 0706758722</p>
WEBSITE	http://dottorati.unica.it/matematicaeinformatica/