Ph.D. Course Information Sheet
40th cycle - A.Y. 2024/2025

NAME OF THE PH.D. COURSE	**SYSTEMS, ENERGY, COMPUTER AND TELECOMMUNICATIONS ENGINEERING**
DURATION	3 years
START DATE	October 1st, 2024
LANGUAGE(S)	Italian, English
COORDINATOR	Prof. Paolo Arena
PLACES IN THE PH.D. COURSE	35
SELECTION PROCEDURE	Evaluation of qualifications and research project, oral examination

Places and scholarships

Number of Scholarships	Financial support	Research topic associated to the scholarship (if any)
3	Funds of the University of Catania	-
3	University NRRP Project FAIR-Spoke 10	1. Neural systems for embodied bioinspired robotics 2. Neuro-inspired mechanisms for incremental learning 3. Brain-Augmented AI: Neuroimaging Data for Better Artificial Intelligence Models
1	University NRRP Project HPC -Spoke 10	Cryogenic integrated circuits for quantum processors
1	University NRRP Project Restart -Spoke 3	Antennae and millimiter wave technologie
1	University NRRP Project Restart _ Spoke 4	Programmable network
2	University NRRP Project Restart – Spoke 5	Industrial and Digital Transition Networks
3	University NRRP Project Restart – Spoke 7	Integrated sensing

1	University NRRP Project Restart – Spoke 6	Disruptive architectures and open platforms for network innovation
1	University NRRP Project Samothrace – Spoke 1	Low Voltage Analog and digital circuit CMOSIC
1	University NRRP Project Samothrace – Spoke 1	Characterization and validation of Micro-sensors for cultural heritage applications
1	University NRRP Project HPC – Spoke 9	Data-driven solutions for vehicle flow prediction in urban mobility scenarios
1	University NRRP Changes – Spoke 5	Measurement systems in the context of cultural heritage
1	X Tronic GmbH	Research and development of advanced software components and systems for innovative automotive applications
1	NRRP M.D. n. 630/2024 in collaboration with Xenia Progetti	Soluzioni data-driven di efficientamento energetico in ambito industriale *Data-driven solutions by energy efficiency in the industrial sector*
1	NRRP M.D. n. 630/2024 in collaboration with Catania Rete Gas S.p.a.	Implementazione di un modello matematico da porre alla base del controllo da remoto per il monitoraggio della pressione del gas in rete *Implementation of a model mathematical to be placed at the basis of the remote control for gas pressure monitoring in the network*
1	NRRP M.D. n. 630/2024 in collaboration with Idea	Metodi avanzati di progettazione parametrica CAD-CAE di bracci meccanici per attività manutentive *Advanced design methods parametric CAD-CAE of arms mechanics for maintenance activities*
1	NRRP M.D. n. 630/2024 in collaboration with EUROMECC SRL	Codifica ed implementazione di twin digitali per l'ottimizzazione della gestione operativa e della manutenzione di impianti

		industriali *Coding and implementation of digital twins for optimizing the operational management and maintenance of industrial plants*
1	NRRP M.D. n. 630/2024 in collaboration with NetSense srl	Metaverse and machine learning in multiscale 6G networks
1	NRRP M.D. n. 630/2024 in collaboration with Xenia Network Solutions S.r.l	Studio di modelli innovativi di analisi comportamentale e ambientale basati su tecniche di computer vision e deep learning per la sicurezza in ambito smart c *Study of innovative behavioral and environmental analysis models based on computer vision and deep learning techniques for security in the smart cities field ities*
1	NRRP M.D. n. 630/2024 in collaboration with GB innovative project consulting srl	Innovative Technology for Achivieng Zero Emission Building
1	NRRP M.D. n. 630/2024 in collaboration with STlab s.r.l.	Sviluppo di sistemi di misura e controllo per applicazioni biotecnologie *Development of measurement systems and control for biotechnology applications*
1	NRRP M.D. n. 630/2024 in collaboration with Sicilsat Communications	Studio di soluzioni innovative di antenne a scansione di fascio per applicazioni a microonde/onde millimetriche *Study of innovative solutions by beam scanning antennas for millimetric microwave/wave applications*
1	NRRP M.D. n. 630/2024 in collaboration with	Valorizzazione delle frazioni metalliche e non metalliche da

	GE.S.P.I. S.r.l.	scarti e residui industriali in ottica circolare *Valorization of fractions metallic and non-metallic from waste and industrial residues in a circular perspective*
1	NRRP M.D. n. 630/2024 in collaboration with Sielte S.p.a.	Network Intelligence per Applicazioni a Bassa Latenza e Servizi Immersivi *Network Intelligence for Low Latency Applications and Immersive Services*
1	NRRP M.D. n. 630/2024 in collaboration with Bax Energy Italia s.r.l	Strategie basate su AI per per elaborazione e analisi di eventi non puntuali in tempo reale *AI-based strategies for for processing and analysis of non-punctual events in real time*
1	STMicroelectronics S.r.l.	Catene di lettura ultra low power e ultra low noisem per applicazioni wearables *Ultra low power and ultra low noise reading chains for wearable applications*
1	Maxim Integrated Products UK Ltd	Development of new innovative solutions in the field of Power Management IC

È inoltre previsto **un solo posto senza borsa** di studio.

Selection procedure

	MODALITY	PUBLICATION OF THE RESULTS ON THE UNIVERSITY'S WEBSTIE

Evaluation of qualifications and research project	Candidates presence not required	From July 25th 2024
Oral examination	**Date**: From 9 am of August 27 2024 **Place**: In presence, Department of Electric, Electronic and Computer Engineering **or** online via Microsoft Teams platform or equivalent platform according to communication of the selection committee	From September 1 2024

* * If the number of admitted candidates does not allow the oral test to be held on a single day, a calendar will be published on the website together with the results of the evaluation of qualifications and the research project.

* ** The results of the admission tests will be available on the website. Publication on the site has the value of notification. No communication will be sent to candidates via email.

Documents to be annexed to the application

Only documents drawn up in **Italian**, **English** or **French** will be considered valid and evaluated by the Commission. For identity documents and qualifications issued in a different language, a sworn and certified translation into Italian, French or English made by an authorized body or the University that issued the qualification must be attached.

MANDATORY DOCUMENTS TO BE SUBMITTED WITH THE APPLICATION FORM	
Identity document	Scan of a valid identity document in accordance with the provisions of Art. 35 c.2 D.P.R. 28 December 2000 n. 445 and subsequent amendments: "The passport, the driving license, the boat license, the pension booklet, the license to operate heating systems, the firearms license, the identification cards, provided that they have a photograph and a stamp or other equivalent signature, are equivalent to the identity card, issued by a state administration."
Curriculum Vitae	No specific format is required. The CV must be dated and signed (the signature will be valid only if handwritten or digital). Candidates who submit CVs without a signature will be excluded from the selection.
Qualifications	See Call for applications with particular reference to art. 3, paragraph 4

Progetto diricerca	Research project a) divided into: state of the art; description of the project; expected results; articulation of the project and implementation times; proposed criteria for the verification of the results achieved; Concise bibliography. b) maximum length of 25,000 characters, including title, spaces, formulas, bibliography
Publications	- List of any scientific publications (indicate DOI number, ISBN/ISSN)
Documents certifying the knowledge of the foreign language, if any	- Any certificate, attesting to the knowledge of a foreign language in the E.U., issued by a legally recognized institution (by way of example but not limited to: TEOFL, IELTS, Cambridge Exol, DELF, DELE, KEG, Goethe Institut, etc.)
Documents certifying computer skills	- Any documents certifying computer skills
Documents relating to further training courses	- University Master of I or II level - Specialization and/or Higher Education courses in subjects related to the research fields covered by the PhD Course - Scientific research, of any type (basic, oriented, finalized, translational, applied, etc.) and carried out in any capacity, including holding research grants and participation in research projects; - Additional Master's degree

Selection procedure criteria

The assessment is expressed through the attribution of an overall score, as established by art. 5 of the call for applications, to which reference should be made.

1. **Evaluation of qualifications and research project :** minimum score to be admitted to the oral examination: 40 points, maximum 60 points

2. **Oral examination** – minimum to pass the examination: 40 points, maximum 60 points