

NOTICE OF APPLICATION FOR ADMISSION TO DOCTORAL RESEARCH PROGRAMMES POLITECNICO DI BARI A.A. 2024/2025

Art. 1: Course establishment and commencement

The XL cycle of doctorate research programmes will take place for the academic year 2024/2025 with its administrative centre as the Politecnico di Bari. The programme will include the following courses:

PhD Programme	Department
1. DOCTORATE IN MECHANICAL AND ENERGY ENGINEERING (hereafter abbreviated to DRIME)	Department of Mechanics, Mathematics and Management
2. DOCTORATE IN MANAGEMENT ENGINEERING (hereafter abbreviated to DRIG)	Department of Mechanics, Mathematics and Management
3. DOCTORATE IN ELECTRICAL AND INFORMATION ENGINEERING (hereafter abbreviated to DRIEI)	Department of Electrical and Information Engineering
4. DOCTORATE IN RISK, ENVIRONMENTAL, TERRITORIAL AND BUILDING DEVELOPMENT (hereafter abbreviated to DRSATE)	Department of Civil, Environmental, Land and Building Engineering and Chemistry
5. DOCTORATE IN HERITAGE PLANNING: KNOWLEDGE, TRADITION AND INNOVATION (hereafter abbreviated to CTI)	Department of Architecture, Construction and Design
6. INTER-UNIVERSITY DOCTORATE IN ENGINEERING AND AEROSPACE SCIENCES (WITH UNIVERSITÀ DEGLI STUDI DI BARI "ALDO MORO") (hereafter abbreviated to DRISA)	Department of Mechanics, Mathematics and Management
7. INTER-UNIVERSITY DOCTORATE IN SMART AND SUSTAINABLE INDUSTRY (WITH UNIVERSITÀ DEGLI STUDI DI BARI "ALDO MORO") (hereafter abbreviated to SSI)	Department of Electrical and Information Engineering
8. JOINT DOCTORATE WITH UNIVERSITÀ DEL SALENTO SALENTO, ISTITUTO PER LE TECNOLOGIE DELLA COSTRUZIONE DEL CONSIGLIO NAZIONALE DELLE RICERCHE (ITC-CNR) IN SUSTAINABILITY ENGINEERING AND SAFETY IN CIVIL AND INDUSTRIAL CONSTRUCTION (hereafter abbreviated to DRISS)	Department of Architecture, Construction and Design
9. NATIONAL DOCTORATE IN AUTONOMOUS SYSTEMS (hereafter abbreviated to DAUSY)	Department of Electrical and Information Engineering
10. INDUSTRIAL DOCTORATE IN CHANGE MANAGEMENT IN CIVIL ENGINEERING INFRASTRUCTURES (hereafter abbreviated to CMCEI)	Department of Civil, Environmental, Land and Building Engineering and Chemistry

These PhD programmes form part of the Doctoral School of Politecnico di Bari (Scu.Do.).

PhD programmes have a 3-year duration. The starting date will be **01/11/2024**. All teaching is carried out in English. Admission to XL cycle PhD programmes will be through a public selection procedure based on qualifications and interview.

The number of places available with grant funding for each PhD programme (as shown in article 2) may increase in line with any future funding from public or private bodies which make resources available subsequent to the publication of this call, without affecting the above deadline or fixed number of places available without grant funding.

Doctorate research programmes are established on the condition that they meet the accreditation regulations stipulated under Ministerial Decree 226/2021.

The current call is deemed official notification to all intents and purposes. All communication regarding application procedures will be sent to the candidate's e-mail address as indicated on the application form.

Art. 2: Course descriptions

The PhD programmes and grants available are outlined as below.

1. PhD Programme in Mechanical and Energy Engineering - DRIME

Coordinator: Prof. Antonio Emmanuele Uva

Department of Mechanics, Mathematics and Management

AVAILABLE PLACES no. 20

(1 grant reserved for graduates of non-Italian universities), of which:

- **4 places** with "**Patti Territoriali**" grant as part of the project "**Patto Territoriale sistema universitario pugliese**"
- **10 places** with grants **co-financed by public/private bodies**, of which:
 - 8 places with grant as per Ministerial Decree 630/2024
 - 2 places with "**Patto Territoriale sistema universitario pugliese**" project grant
- **1 place** with "**PNRR – Partenariati Estesi**" grant
- **5 places without grant funding**

Total annual grant (gross total before social security contributions made by the beneficiary): **€ 18,679.45**

RESEARCH TOPICS AS PER "PATTI TERRITORIALI" PLACES

Available grants: 4

1. Development of numerical methods of fluid-structure interaction
2. Development of sustainable combustion models
3. Measurements and virtual measurements for industrial and civil systems
4. Bio-tribology for complex lubricated interfaces
5. Innovative methodologies for the development of biodevices
6. Innovative applications of AI and XR
7. Mathematical models for materials
8. Integration of smart ergonomics and training in industrial environments

9. Advanced design and characterization for sustainable mobility
10. Manufacturing technologies for sustainability

RESEARCH TOPICS AS PER PLACES CO-FINANCED BY PUBLIC/PRIVATE BODIES

Available grants: 10

1. Numerical and experimental investigation of ammonia combustion processes in industrial combustion systems for power generation - co-financed by **Centro Combustione Ambiente S.p.A.**
2. Numerical and experimental investigation of Hydrogen fueled Single and Multi-cylinder Internal Combustion Engines - co-financed by **Isotta Fraschini Motori S.p.A.**
3. Study and optimization of an electromechanical device for energy recovery from vehicular traffic - co-financed by **Daken S.p.A.**
4. Development and application of non-destructive techniques for evaluating the structural integrity of mechanical components - co-financed by **Diagnostic Engineering Solutions s.r.l.**
5. Development of Battery Management Systems (BMS) for electric or hybrid electric aircrafts - co-financed by **Leonardo S.p.A.**
6. Development of innovative solutions to improve the sustainability of the rolling process using a numerical/experimental approach - co-financed by **Kimya s.r.l.**
7. Developing AI techniques for augmented reality in robotic surgery - co-financed by **Research Innovation Group Up Srl S.B.**
8. Cooling the Drive: Innovations in Electric Vehicle Battery Thermal Management - co-financed by **Centro Ricerche Fiat S.C.p.A.**
9. Tribological properties of the viscoelastic sliding rough contact of polymeric materials - co-financed by **Pirelli Tyre S.p.A.**
10. Numerical and experimental investigation of fuel composition effects on thermoacoustic stability of gas turbines combustors - co-financed by **Ansaldo Energia S.p.A.**

Part of the research activity must be carried out by beneficiaries of this grants at the premises of the body/company in line with a research programme agreed upon by the parties.

RESEARCH TOPIC AS PER "PNRR – PARTENARIATI ESTESI" PLACE

Available grants: 1

1. Clean Hydrogen and Final Uses – financed within PNRR - Partenariato Esteso (NEST) fundings - Spoke 4 – Prof. M. Torresi

2. PhD Programme in Management Engineering - DRIG

Coordinator: Prof. Ilaria Filomena Giannoccaro

Department of Mechanics, Mathematics and Management

PLACES AVAILABLE no. 8

(1 grant is reserved for graduates from non-Italian universities), of which:

- **2 places as per “Ministerial Decree 629/2024” grant, of which:**
 - 1 for Transizioni Digitali e Ambientali (Digital and Environmental Transition)
 - 1 for Pubblica Amministrazione (Public Administration)
- **2 places with “Patti Territoriali” grant as part of the project “Patto Territoriale sistema universitario pugliese”**
- **2 places with grant co-financed by public/private bodies as per Ministerial Decree 630/2024**
- **2 places without grant funding**

Total annual grant (gross total before social security contributions made by the beneficiary): **€ 18,679.45**

RESEARCH TOPICS AS PER “MINISTERIAL DECREE 629/2024” AND “PATTI TERRITORIALI” PLACES

Available grants: 4

1. Management of Sustainability
2. High-value materials management to enhance the sustainability of Additive Manufacturing processes
3. Management of technological evolution
4. Models and methods of industrial, technological, organizational transitions
5. Additive manufacturing for twin transition
6. Safety, security, resilience
7. Circular economy and industrial symbiosis
8. Consumption models for eco-sustainable products
9. Decisions making models and tools
10. Hydrogen Economy as a Key Driver in the transition to net Zero Greenhouse Gas Emissions

RESEARCH TOPICS AS PER PLACES CO-FINANCED BY PRIVATE BODIES

Available grants: 2

1. Exergy analysis for optimizing the sustainability performance of manufacturing processes- co-financed by **Mermec Ferrosud s.r.l.**
2. Exergetic modeling of processing processes for manufacturing sustainability - co-financed by **SKF Industrie S.p.A.**

Part of the research activity must be carried out by beneficiaries of this grants at the premises of the body/company in line with a research programme agreed upon by the parties.

3. PhD Programme in Electrical and Information Engineering - DRIE

Coordinator: Prof. Mario Carpentieri

Department of Electrical and Information Engineering

PLACES AVAILABLE no. 20

(1 grant is reserved for graduates from non-Italian universities), of which:

- **6 places** with **"Patti Territoriali"** grant as part of the project **"Patto Territoriale Sistema universitario pugliese"**
- **4 places** with grant **co-funded by private bodies** as per Ministerial Decree 630/2024
- **3 places** with grant funded by **public/private bodies**, of which:
 - 1 place with grant funded by CINECA
 - 2 places with grant funded by A.S.I.
- **2 places** with **"PNRR - Partenariati Estesi"** grant
- **5 places** without grant funding

Total annual grant (gross total before social security contributions made by the beneficiary): **€ 18,679.45**

RESEARCH TOPICS AS PER "PATTI TERRITORIALI" PLACES

Available grants: 6

1. KVI-oriented Platforms and Infrastructures
2. Ubiquitous and sustainable digitalization
3. Molecular Twins and Systems Biology for Precision Oncology: Towards Accurate Prognosis and Optimized Therapy for Cancer Patients
4. Intelligent and innovative solutions for sustainable mobility including self-driving vehicles
5. Chip-scale biosensing technologies enabled by Silicon Photonics
6. Development of novel energy harvesting technologies
7. Integrated non-reciprocal photonic and plasmonic devices for optical communications based on novel materials
8. Medium voltage direct current MVDC distribution system
9. Investigation of innovative technologies and solutions for Intelligent Agents
10. Technologies for precision medicine from multi-omics to ambient assisted living

RESEARCH TOPICS AS PER PLACES CO-FINANCED BY PRIVATE BODIES

Available grants: 4

1. Controlled Islanding and Black Start service through Distributed Energy Resources control - co-financed by **Ricerca sul Sistema Energetico S.p.A.**
2. Development and optimization of innovative medium-voltage electric systems for the electrification of aerospace applications - co-financed by **Leonardo S.p.a.**
3. Design of novel ka-band flexible phased array for satellite communications - co-financed by **Iametek s.r.l.**
4. Generative ai for innovative control of closure and capping system production industry - co-financed by **Arol S.p.A.**

Part of the research activity must be carried out by beneficiaries of this grants at the premises of the body/company in line with a research programme agreed upon by the parties.

RESEARCH TOPICS AS PER PLACES CO-FINANCED BY PUBLIC/PRIVATE BODIES

Available grants: 3

1. Generative AI solutions for personalization of multimedia content: a scalable and reliable approach – financed by **CINECA Consorzio Interuniversitario**
2. Silicon Photonics for innovative AOCS systems - financed by **Agenzia Spaziale Italiana**
3. Antiferromagnetic memories with reading mechanism based on tunnel magnetoresistance - financed by **Agenzia Spaziale Italiana**

RESEARCH TOPICS AS PER “PNRR – PARTENARIATI ESTESI” PLACES

Available grants: 2

1. Strategies for greater flexibility and resiliency of the electricity infrastructure through multi-vector and multi-sector integrated energy systems- financed within PNRR - Partenariato Estesi (NEST) funding - Spoke 7 – Prof. E. De Tuglie
2. Methodologies to improve adequacy, reliability, resilience and security of electricity systems in the presence of RES - financed within PNRR - Partenariato Estesi (NEST) funding - Spoke 7 – Prof. E. De Tuglie

4. PhD Programme in Risk, Environmental, Territorial and Building Development - DRDATE

Coordinator: Prof. Vito Iacobellis

Department of Civil, Environmental, Land and Building Engineering and Chemistry

PLACES AVAILABLE no. 20

(1 grant is reserved for graduates from non-Italian universities), of which:

- **2 places** with grant as per “**Ministerial Decree 629/2024**” (Pubblica Amministrazione - Public Administration)
- **3 places** with “**Patti Territoriali**” grant as part of the project “**Patto Territoriale sistema universitario pugliese**”
- **8 places** with grant **co-funded by public/private bodies** of which:
 - 6 places with grant as per Ministerial Decree 630/2024
 - 2 places with “**Patto Territoriale sistema universitario pugliese**” project grant
- **1 place** with grant **funded by ENEA**
- **1 place** with **REACH XY** grant funded as part of Budget Law 234/2021
- **5 places** **without grant funding**

Total annual grant (gross total before social security contributions made by the beneficiary): **€ 18,679.45**

RESEARCH TOPICS AS PER “MINISTERIAL DECREE 629/2024” AND “PATTI TERRITORIALI” PLACES

Available grants: 5

1. Innovative digital tools for the knowledge and refurbishment of civil and environmental heritage
2. Vulnerability and resilience of existing building heritage: multicriteria structural, technological and economic analyses
3. Innovative solutions for mobility and sustainable land development.

4. Structural safety issues of infrastructure works interacting with the territorial context
5. Advanced strategies and technologies for Mitigation of Hydrogeological Risk
6. Integrated and Sustainable Approaches for the Management and Quality of Surface and/or Underground Water Bodies
7. Sustainable multidisciplinary approaches in optimizing the use of land and natural or artificial resources
8. Protection and conservation of natural or artificial (urban or rural) ecosystems.
9. Monitoring, analysis, and remediation of environmental pollution phenomena and preservation of natural resources
10. Reuse and recycling of natural or man-made materials

RESEARCH TOPICS AS PER PLACES CO-FINANCED BY PUBLIC/PRIVATE BODIES

Available grants: 8

1. Development of underground thermal storage systems serving energy districts for sustainable urban regeneration - co-financed by **A2A S.p.A.**
2. Innovative technologies for the valorization of dredged marine sediments - co-financed by **Simem S.p.A.**
3. Energy Resilience of Buildings to local and global climate change. Integrated techno-economic analyses - co-financed by **Architecture Klima Engineering s.r.l.**
4. Sustainable technologies for recovery/recycling of dredged marine sediments - co-financed by **Autorità di Sistema Portuale del Mare Adriatico Meridionale**
5. Development of gasification processes for the valorisation of waste produced by biological waste treatment - co-financed by **Tersan Puglia S.p.A.**
6. Using green hydrogen for decarbonisation and alternative fuel production - co-financed by **Carella Engineering and Consulting s.r.l.**
7. Development of innovative processes for the production of hydrogen from waste - co-financed by **Seros Invest Energy s.r.l.**
8. Sustainable design of tunnels and viaducts in landslide areas - co-financed by **Consorzio Hirpinia AV**

Part of the research activity must be carried out by beneficiaries of this grants at the premises of the body/company in line with a research programme agreed upon by the parties.

RESEARCH TOPIC AS PER ENEA PLACE

Available grants: 1

1. Advancing NMR for Food Analysis and Authentication – financed by **Agenzia Nazionale per le Nuove Tecnologie, l'Energia e lo Sviluppo Economico Sostenibile (ENEA)**

RESEARCH TOPICS AS PER "REACH XY" PLACE

Available grants: 1

1. Design of early detection systems of plant diseases - Project REACH-XY - Prof. V. Gallo

5. PhD Programme in Heritage Planning: Knowledge, Tradition and Innovation - CTI

Coordinator: Prof. Giuseppe Fallacara

Department of Architecture, Construction and Design

PLACES AVAILABLE no. 10

(1 grant is reserved for graduates from non-Italian universities), of which:

- **1 place with grant as per "Ministerial Decree 629/2024"** (Patrimonio Culturale - Cultural Heritage)
- **3 places with "Patti Territoriali" grant as part of the project "Patto Territoriale sistema universitario pugliese"**
- **4 places with grant co-funded by public/private bodies, of which:**
 - 3 places with grant as per Ministerial Decree 630/2024
 - 1 place with "Patto Territoriale sistema universitario pugliese" project grant
- **2 places without grant funding**

Total annual grant (gross total before social security contributions made by the beneficiary): **€ 18,679.45**

RESEARCH TOPICS AS PER "MINISTERIAL DECREE 629/2024" AND "PATTI TERRITORIALI" PLACES

Available grants: 4

1. Marginalized publishing as intangible cultural heritage: queer representations in independent journals for social innovation
2. M.I.A. Made in Italy Archives. Faro's Convention new challenges and design for local development: from the documental archives to the production processes ones
3. Architectures for the community: modern architectural heritage knowledge, enhancing and management
4. The digitalization of the minor regional architectural heritage for its preservation and enhancement
5. Topography as a principle of form in archaeological landscape projects: the case study of Agrigento
6. Utopia and dystopia in the hypogean world
7. Arid landscapes. Cultural landscapes and climate change
8. Shapes of the earth: Torchis and digital fabrication
9. Immigration and inclusion between cities and rural landscapes: residential and settlement models for the migrating communities of the Capitanata
10. Re-design of the waste to re-inhabit the internal areas

RESEARCH TOPICS AS PER PLACES CO-FINANCED BY PUBLIC/PRIVATE BODIES

Available grants: 4

1. Technologies for architecture of the future - co-financed by **C&F Developments Italia s.r.l.**
2. The house of the future - co-financed by **Loglisciarchitetti s.r.l.**
3. Eco-compatible lithic construction and experimentation - co-financed by **Stilmarmo s.r.l. e Nar.marmi s.r.l.**
4. Shapes of the earth: Rammed earth and digital fabrication - co-financed by **FabLab Bitonto**

Part of the research activity must be carried out by beneficiaries of this grants at the premises of the body/company in line with a research programme agreed upon by the parties.

6. Inter-university PhD (with Università degli Studi di Bari "Aldo Moro") in Engineering and Aerospace Sciences - DRISA

Coordinator: Prof. Marco Donato de Tullio

Department of Mathematical Mechanics and Management

PLACES AVAILABLE no. 12

(1 grant is reserved for graduates from non-Italian universities), of which:

- **3 places with "Patti Territoriali" grant as part of the project "Patto Territoriale Sistema universitario pugliese"**
- **3 places with grant funding from Università degli Studi di Bari "Aldo Moro"**
- **2 places with grant funding from ASI**
- **1 place with grant funding from the "PNRR – Centri nazionali"**
- **3 places without grant funding**

Total annual grant (gross total before social security contributions made by the beneficiary): **€ 18,679.45**

RESEARCH TOPICS AS PER "PATTI TERRITORIALI" PLACES

Available grants: 3

1. Space Economy: challenges and opportunities in the new space era
2. Advanced tools for design and characterization of spacecrafts under atmospheric re-entry conditions
3. Development of advanced models for space biomedicine
4. Reconfigurable intelligent surfaces for terrestrial-non terrestrial (TNT) communications
5. Advancing sustainable aerospace Solutions: Biopolymeric materials for eco-friendly innovation
6. Human breath analysis for the detection of metabolic markers in subjects employed in the aerospace industry
7. Advanced modeling of fluid-structure interaction problems
8. Measurement and validation techniques for environmental testing
9. Clean hydrogen propulsion: efficiency enhancement of hydrogen turbogas combustors through the development of turbulence and combustion models
10. New technologies for distributed SAR satellite systems

RESEARCH TOPICS AS PER ASI PLACES

Available grants: 2

1. The role of suborbital flights in the development of the Space Economy – financed by **Agenzia Spaziale Italiana (ASI)**
2. Aerothermodynamics of hypersonic Titan atmospheric entry using advanced thermophysical models and a multi-GPU flow solver – financed by **Agenzia Spaziale Italiana (ASI)**

RESEARCH TOPIC AS PER "PNRR – CENTRI NAZIONALI" PLACE

Available grants: 1

1. Multifield FEM models for the dynamic characterization of metamaterials and composites - financed within PNRR - CN MOST (Centro Nazionale per la Mobilità Sostenibile) – Spoke 11 – Prof. G. Palumbo

7. Inter-university PhD (with Università degli Studi di Bari "Aldo Moro") in Smart and Sustainable Industry – SSI

Coordinator: Prof.ssa Caterina Ciminelli

Department of Electrical Engineering and Information Technology

PLACES AVAILABLE no. 16

(1 grant is reserved for graduates from non-Italian universities), of which:

- **3 places** with **"Patti Territoriali"** grant as part of the project *"Patto Territoriale Sistema universitario pugliese"*
- **4 places** with scholarship **co-financed by public/private bodies** of which:
 - 3 places with grant funding as per Ministerial Decree 630/2024
 - 1 place with grant funding from the *"Patto Territoriale sistema universitario pugliese"* project
- **3 places** with grant funding from **Università degli Studi di Bari "Aldo Moro"**
- **2 places** with grant funding from **"BRIEF", "EVOQUE" and "D3 4 HEALTH" projects**
- **4 places without grant funding**

Total annual grant (gross total before social security contributions made by the beneficiary): **€ 18,679.45**

RESEARCH TOPICS AS PER "PATTI TERRITORIALI" PLACES

Available grants: 3

1. Eco-sustainable materials and innovative structures for the reduction of electromagnetic pollution
2. Implementation of advanced control strategies based on artificial intelligence for collaborative robotics, telerehabilitation and teleassistance
3. Multi-vector energy planning tools for Renewable Energy Urban Clusters
4. Technologies and management systems for smart electricity grids, microgrids and renewable energy communities
5. Photoactive inorganic materials for advanced biomedical and environmental applications
6. Smart Radio Environment for Smart Industries
7. Electronic systems based on monolithic integration and hybrid technology for 6G and beyond 6G telecommunications systems, operating on microwaves and millimeter waves
8. Innovative technologies for sustainable in-Space mining
9. Implementation of driving logic aimed at reducing motion sickness in self-driving vehicles
10. Development of innovative techniques for Remotely Operated Underwater Vehicles navigation

RESEARCH TOPICS AS PER PLACES CO-FINANCED BY PUBLIC/PRIVATE BODIES

Available grants: 4

1. System architectures for UAS flight test data management- co-financed by **Distretto Tecnologico Aerospaziale SC.a.r.l.**
2. Quantum photonics integration - co-financed by **Leonardo S.p.A.**
3. Development of space-based capabilities for advancing space situational awareness - co-financed by **Planetek Italia s.r.l. SB**
4. Advanced Techniques and Circuits for Transducer Driving Systems of Ultrasound Transmitters in Medical Imaging Applications - co-financed by **Analog Devices s.r.l.**

Part of the research activity must be carried out by beneficiaries of this grants at the premises of the body/company in line with a research programme agreed upon by the parties.

RESEARCH TOPICS AS PER "BRIEF", "EVOQUE" AND "D3 4 HEALTH" PLACES

Available grants: 2

1. Development of compact and flexible QEPAS systems – financed within projects BRIEF, EVOQUE, D3 4 HEALTH – Prof. V. L. Spagnolo
2. Innovative vocs detection techniques using combined approaches based on spectroscopy and gas-chromatography/mass-spectrometry – financed within projects BRIEF, EVOQUE, D3 4 HEALTH – Prof. V. L. Spagnolo

8. Joint PhD with

Università del Salento, Istituto per le Tecnologie della Costruzione del Consiglio Nazionale delle Ricerche (ITC-CNR) in

Sustainability Engineering and Safety of Civil & Industrial Buildings - DRISS

Coordinator: Prof. Mario Daniele Piccioni

Department of Architecture, Construction and Design

PLACES AVAILABLE no. 9

(1 grant is reserved for graduates from non-Italian universities), of which:

- **2 places with "Patti Territoriali" grant as part of the project "Patto Territoriale Sistema universitario pugliese"**
- **1 place with grant funding as per "Ministerial Decree 629/2024"**
- **3 places with grant co-funded by private bodies as per Ministerial Decree 630/2024**
- **1 place with grant funding from ITC-CNR**
- **2 places without grant funding**

Total annual grant (gross total before social security contributions made by the beneficiary): € 18,679.45

RESEARCH TOPICS AS PER "MINISTERIAL DECREE 629/2024" AND "PATTI TERRITORIALI" PLACES

Available grants: 3

1. Safety of structures made of innovative materials: large deformations models
2. New technological solutions for sustainable and low energy consumption constructions
3. Energy communities: new frontiers for the sustainable management and valorization of the use of hydrogen as an energy source
4. Innovative composite material lifting platforms
5. Zero energy factory: decarbonization and flexible energy management in industrial buildings
6. Development of remote techniques for structural health monitoring of offshore wind turbines

RESEARCH TOPICS AS PER PLACES CO-FINANCED BY PRIVATE BODIES

Available grants: 3

1. Research and development of windows and doors as selective factors for energy exchanges. Analysis of behaviors and indications for the development of new products for universal use and economically sustainable -- co-financed by **LFM S.p.A.**

2. Safety and sustainability of civil construction: material and construction sites -- co-financed by **Matarrese S.p.A.**
3. Replacing the acid pickling process for tanks for agribusiness use with laser pickling in the interests of environmental sustainability and energy conservation - co-financed by **MM Steel s.r.l. (Università del Salento)**

Part of the research activity must be carried out by beneficiaries of this grants at the premises of the body/company in line with a research programme agreed upon by the parties.

RESEARCH TOPIC AS PER ITC-CNR PLACE

Available grants: 1

1. Vibration Serviceability Of Road bridges - financed by **Istituto per le Tecnologie della Costruzione del Consiglio Nazionale delle Ricerche** within funding related to PNRR - Missione 4 "Istruzione e Ricerca" - Componente C2 Investimento 1.1, "Fondo per il Programma Nazionale di Ricerca e Progetti di Rilevante Interesse Nazionale (PRIN)" Bando PRIN 2022 PNRR - Project "ViSOR" (Vibration Serviceability Of Road bridges) - CUP B53D23027090001

9. PhD Course of National Interest in Autonomous Systems – DAUSY

Doctoral programme in collaboration with:

Libera Università di Bolzano, Politecnico di Torino, Università degli Studi del Sannio, Università degli Studi della Campania "Luigi Vanvitelli", Università degli Studi dell'Aquila, Università degli Studi di Brescia, Università degli Studi di Cagliari, Università degli Studi di Genova, Università degli Studi di Padova, Università degli Studi di Palermo, Università degli Studi di Parma, Università degli Studi di Siena, Università degli Studi di Roma "Tor Vergata", Università degli studi di Verona, Università degli Studi Roma Tre, Università di Modena e Reggio Emilia, Università degli Studi di Trento, Università Politecnico delle Marche, Università degli Studi di Napoli "Federico II"

Coordinator: Prof. Mariagrazia Dotoli

Department of Electrical and Information Engineering

PLACES AVAILABLE no. 33

(1 grant is reserved for graduates from non-Italian universities), of which:

- **2 places** with "**Patti Territoriali**" grant as part of the project "Patto Territoriale sistema universitario pugliese"
- **1 place** with grant funding as per "**Ministerial Decree 629/2024**"
- **21 places** with grant **co-funded by public/private bodies**, of which:
 - 19 places with grant funding as per Ministerial Decree 630/2024
 - 2 places with grant funding as part of the "Patto Territoriale sistema universitario pugliese" project
- **3 places** with grant funding from "**ERC**"
- **6 places** with grant funding of the **associated Universities**

Total annual grant (gross total before social security contributions made by the beneficiary): **€ 16,243.00**

RESEARCH TOPICS AS PER "MINISTERIAL DECREE 629/2024" AND "PATTI TERRITORIALI" PLACES

Available grants: 3

1. Optimal design and operation of robotized and automated warehouses (**Politecnico di Bari**)
2. Interconnected Digital Twins (**Politecnico di Bari**)
3. Intelligent autonomous systems for real-time guidance and support to robotic surgeons (**Politecnico di Bari**)
4. Autonomous systems for real-time monitoring of fragile subjects (**Politecnico di Bari**)
5. Optimization of networked smart energy systems (**Politecnico di Bari**)
6. Robots-as-a-service in the digital industry (**Politecnico di Bari**)
7. Safe and Ergonomic Human-Drone Interaction in Logistics (**Politecnico di Bari**)
8. Intelligent and Efficient Human-Robot Collaboration (**Politecnico di Bari**)
9. Robust robotic manipulation and planning under uncertainties (**Università degli Studi di Trento**)

RESEARCH TOPICS AS PER PLACES CO-FINANCED BY PUBLIC/PRIVATE BODIES

Available grants: 21

1. Methodologies and protocols for innovation and interoperability between Internet of Things standards in home automation– co-financed by **Nextome s.r.l. (Politecnico di Bari)**
2. Intelligent image processing and decision support systems for skin lesion management in proximity healthcare – co-financed by **ITEM OXYGEN s.r.l. (Politecnico di Bari)**
3. Vision guided robotic assembly for automotive components in manufacturing and remanufacturing industry – co-financed by **MASMEC S.p.A. (Politecnico di Bari)**
4. Human Interaction with Digital Twins of Intelligent Industrial Systems – co-financed by **MASMEC S.p.A. (Politecnico di Bari)**
5. Intelligent systems for industrial robotics – co-financed by **Comau S.p.A. (Politecnico di Bari)**
6. Algorithms for management and control of mobile agent fleets – co-financed by **E80 Group S.p.A. (Politecnico di Bari)**
7. Decision and control techniques for autonomous mobile robots in unstructured environments – co-financed by **G-Nous Tech s.r.l. (Politecnico di Bari)**
8. Optimization and control strategies for power management of hybrid propulsion systems – co-financed by **Isotta Fraschini Motori S.p.A. (Politecnico di Bari)**
9. Photonic inertial sensors for next-generation autonomous systems – co-financed by **Northrop Grumman Italia S.p.A. (Politecnico di Bari)**
10. Robotics, AI and predictive diagnostics solutions in rebar processing plants to increase the autonomy of processing machinery – co-financed by **Schnell S.p.A. (Università Politecnica delle Marche)**
11. Embedding proactive safety in perception and control algorithms for collaborative automation – co-financed by **Inxpect S.p.A. (Università degli Studi di Brescia)**
12. Learning and Multi-agent planning, scheduling and vehicle routing for workforce management – co-financed by **DEDEM S.p.A. (Università degli Studi di Cagliari)**
13. Intelligent Control Techniques for Rail Construction and Maintenance Vehicle – co-financed by **Tesmec Rail s.r.l. (Università degli Studi dell'Aquila)**
14. Development of seamless and safe transition algorithms from high automation level ADAS to driver and viceversa – co-financed by **Kineton s.r.l. (Università di Modena e Reggio Emilia)**
15. Production of microorganisms in bioreactors: from modelling to control systems – co-financed by **No Self s.r.l. (Università degli Studi di Napoli "Federico II")**

16. Supervised autonomy: learning effectively and safely from human – co-financed by **ABB AB Corporate Research (Università degli Studi di Padova)**
17. AI-based VSLAM and tracking control for agricultural robots – co-financed by **Consiglio per la Ricerca in agricoltura e l'analisi dell'Economia Agraria (Università degli Studi di Roma "Tor Vergata")**
18. AI/Machine Learning techniques for satellite/space applications – co-financed by **Telespazio S.p.A. (Università degli Studi di Roma "La Sapienza")**
19. Mathematical models, machine learning, and agent-based models of individual and collective human systems that exhibit nonlinear and complex dynamics – co-financed by **Prometeo s.r.l. (Università degli Studi di Siena)**
20. Advanced guidance, navigation, and control algorithms for space vehicles during atmospheric entry, descent, and landing maneuvers – co-financed by **Thales Alenia Space S.p.A. (Politecnico di Torino)**
21. Planning of trajectories in a robotic cell with multiple manipulators – co-financed by **B.L.M. S.p.A. (Università degli Studi di Verona)**

Part of the research activity must be carried out by beneficiaries of this grants at the premises of the body/company in line with a research programme agreed upon by the parties.

RESEARCH TOPICS AS PER PLACES WITH FUNDING OF ASSOCIATED UNIVERSITIES

Available grants: 6

1. Model-based techniques for increasing reliability and safety of autonomous systems (**Università Politecnica delle Marche**) – financed within the projects "Smiling" (CUP B35E11004930008 codice identificativo 040040_DII_LONGHS_PROG_SMILING) and "Smart Cities" (CUP D74G14000080008 codice identificativo 040040_DII_LONGHS_SMART_CITIES_MIUR)
2. Smart control and optimization of electrical smart grids (**Università degli Studi della Campania "Luigi Vanvitelli"**) – financed within the University funding
3. Optimization and control of multiscale processes (**Università degli Studi di Genova**) – financed within University fundings and projects "SACILE_PRIN2022 CORRECT" (CUP: D53D23000980006) and "SIRI_PRIN2022" (CUP: D53D23001120006)
4. Optimization and control techniques for energy management systems (**Università degli Studi di Palermo**) – financed within the University funding
5. Control and trajectory planning for firefighting drones (**Libera Università di Bolzano**) – financed within the University funding
6. Human centered control for Cyber-Physical-Human Systems (**Università degli Studi Roma Tre**) – financed within the project "RESISTO" (816000-2018--H2020_001)

RESEARCH TOPICS AS PER "ERC" PLACES

Available grants: 3

1. Soft and Wearable robotics powered by electro-active fluid – financed within the project "ROBOFLUID – ERC" fundings - Prof. V. Cacucciolo (no. 2 places)
2. Mechanical design of dynamically-excited soft interfaces for smart tuning of contact forces – financed within the project "SURFACE – ERC" fundings - Prof. A. Papangelo

**10. Industrial PhD programme in Change Management in Civil Engineering Infrastructures
in collaboration with Acquedotto Pugliese S.p.A.**

Coordinator: Prof. Orazio Giustolisi

Department of Civil, Environmental, Territorial, Building and Chemical Engineering

PLACES AVAILABLE no. 13

(1 grant is reserved for graduates from non-Italian universities), of which:

- **2 places with "Patti Territoriali"** grant as part of the project "Patto Territoriale sistema universitario pugliese"
- **1 places with grant funding as per "Ministerial Decree 629/2024"** (Pubblica Amministrazione - Public Administration)
- **3 places with grant co-funded by public/private bodies** of which:
 - 2 places with grant as per Ministerial Decree 630/2024
 - 1 place with grant as part of the "Patto Territoriale sistema universitario pugliese" project
- **1 place with grant funded by Acquedotto Pugliese S.p.A.**
- **3 places reserved for employees of Acquedotto Pugliese S.p.A.** (as per art. 10 of Ministerial Decree 226/2021)*
- **3 places without grant funding**

Total annual grant (gross total before social security contributions made by the beneficiary): **€ 18,679.45**

*with **Acquedotto Pugliese S.p.A.** CCNL-agreed remuneration and regulations

RESEARCH TOPICS AS PER "MINISTERIAL DECREE 629/2024" AND "PATTI TERRITORIALI" PLACES

Available grants: 3

1. Leveraging Deep Learning for Landslide Identification and Mapping from Aerial Images and Dynamic InSAR Analysis
2. Innovative coastal modelling approaches for risk assessment
3. Human-centric transport models based on crowdsensing and user experience
4. Achieving decarbonization through the efficient design and construction of durable reinforced concrete infrastructures.
5. Digital twins for the multi-objective design of underground infrastructures.
6. Urban regeneration and housing policies under ecological transition: investigating the prospects of cooperative approaches in public and social housing districts.
7. The economic assessment of the project applied to the construction and valorization of infrastructures and buildings of collective interest
8. Business model innovation for infrastructure management
9. Multiscale approaches based on machine learning and data modelling for the study and design of innovative hierarchical recyclable materials of interest in engineering
10. Digital Water strategies for water distribution networks management and planning

RESEARCH TOPICS AS PER PLACES CO-FINANCED BY PUBLIC/PRIVATE BODIES

Available grants: 3

1. Data-driven energy transition planning: investigating the involvement of renewable energy communities as learning organizations in the co-creation of policies, practices, and places - co-financed by **RSE- Ricerca sul Sistema Energetico S.p.A**

2. Innovative technologies for the remediation of contaminated soils and sediments.-- co-financed by **Montana S.p.A.**
3. Development of pyrolysis processes for the valorization of organic waste-- co-financed by **SEROS INVEST ENERGY s.r.l.**

Part of the research activity must be carried out by beneficiaries of this grants at the premises of the body/company in line with a research programme agreed upon by the parties.

RESEARCH TOPICS AS PER "ACQUEDOTTO PUGLIESE S.p.A." PLACE

Available grants: 1

1. Asset management, climate change and water resource management

Part of the research activity must be carried out by beneficiaries of this grants at the premises of the body/company in line with a research programme agreed upon by the parties.

RESEARCH TOPICS AS PER PLACES RESERVED FOR EMPLOYEES OF ACQUEDOTTO PUGLIESE S.P.A. (art. 10 M.D. 226/2021)*

Available places: 3

1. Efficiency of AQP management and technical processes for the management of water resources in the context of climate change

* with **Acquedotto Pugliese S.p.A.** CCNL-agreed remuneration and regulations

Art. 3: Admission requirements

Admission applications, with no age limit or nationality restrictions, may be submitted by all candidates who:

- **hold qualifications as required** on the deadline date of this application call;
- **obtain the required qualifications for selection** before the deadline date of 31 October 2024;

Applicants should note that:

- qualifications required for admission to PhD programmes are as follows:
 - a. 5-year degree awarded by an Italian university prior to Ministerial Decree 509 (1999);
 - b. Master's Degree (as per Ministerial Decree 509/99);
 - c. Second-level Degree (as per Ministerial Decree 270/04);
 - d. Second-level degree awarded abroad (as per the Bologna Process) which enables the holder to enrol on a PhD programme in their country of origin. These qualifications must be awarded by an officially recognized academic institute.

N.B.: Specific requirements

PhD PROGRAMME	SECOND LEVEL DEGREE REQUIRED FOR ADMISSION
DRIME	All types
DRIG	All types
DRIEI	All types

DRSATE	All types
DRISA	All types
SSI	All types
CMCEI	All types
DAuSy	All types
DRISS	<ul style="list-style-type: none"> • <i>LM-4 Architecture and Building Engineering;</i> • <i>LM-10 Architectural and Environmental Heritage Conservation;</i> • <i>LM-11 Science of Cultural Heritage Conservation;</i> • <i>LM-20 Aerospace and Astronautical Engineering;</i> • <i>LM-23 Civil Engineering;</i> • <i>LM-24 Building Systems Engineering;</i> • <i>LM-26 Safety Engineering;</i> • <i>LM-28 Electrical Engineering;</i> • <i>LM-30 Energy and Nuclear Engineering;</i> • <i>LM-31 Management Engineering;</i> • <i>LM-32 IT Engineering;</i> • <i>LM-33 Mechanical Engineering;</i> • <i>LM-34 Naval Engineering;</i> • <i>LM-35 Environmental and Land Engineering;</i> • <i>LM-44 Mathematical-Physical Modelling for Engineering</i> • <i>LM-48 Urban and Environmental Territorial Planning;</i> • Equivalent academic qualifications awarded under previous university systems; • Equivalent qualifications awarded by recognised foreign university systems.
CTI	<ul style="list-style-type: none"> • <i>LM-2 Archaeology</i> • <i>LM-3 Landscape Architecture</i> • <i>LM-4 Architecture and Building Engineering</i> • <i>LM-4 Single Cycle 5-year degree in Architecture and Building Engineering</i> • <i>LM-10 Architectural and Environmental Heritage Conservation</i> • <i>LM-12 Design</i> • <i>LM-23 Civil Engineering</i> • <i>LM-35 Environmental and Land Engineering</i> • <i>LM-48 Urban and Environmental Territorial Planning :</i> • <i>LM-89 History of Art;</i> • Equivalent academic qualifications awarded under previous university systems; • Equivalent qualifications awarded by recognised foreign university systems.

Candidates whose degree has **already been recognized as equivalent** by an Italian university must attach self-certification indicating all relevant details of this to their application.

Where a qualification awarded by a foreign university has **not yet been declared equivalent** to an Italian university degree, the Selection Committee will decide upon the eligibility of the foreign qualification in line with current Italian regulations and those of the country of origin, as well as any international treaties or agreements on qualification recognition for further study. In order to facilitate the recognition process, candidates must attach all documents pertinent to eligibility evaluation to their online applications. The compilation of online applications entails an implicit request for the verification of all qualifications awarded abroad.

The evaluation of qualification eligibility is only possible if the documentation provided clearly shows all the required information, including **specific details** (degree type; typical length of degree course; official title of academic institute awarding the degree; date qualification obtained; mark or grade achieved in relation to the scale used in the higher education system in question).

Candidates are accepted provisionally until the validation of all admission requirements. Politecnico di Bari may ascertain the fulfilment of these requirements at any time, also after programmes have commenced, as per art. 43 of Consolidation Act 445/2000. Candidates may be excluded at any time by substantiated decision.

Art. 4: Applications

Applications to the abovementioned Ph.D. programmes can be made **from 12:00 on 12 June 2024 until 12:00 (Italian time) on 17 July 2024 (final deadline date)** exclusively using the procedures set out on the **PICA webpage** at the following link <https://pica.cineca.it/poliba/dottorato40/>

The webpage can be accessed by registering or using SPID credentials, as outlined under the guidelines ([link to guidelines](#)). **In case of technical problems before or during application procedures, candidates may contact the PICA Helpdesk at the link on the application form (from Monday to Friday, 9:00-17:00).**

Application instructions for each doctorate research programme may be found in article 5 below.

Applications which are presented in different formats will not be considered.

Candidates are responsible for correct adherence to online procedures.

It is recommended that candidates apply to the selection procedure well in advance of the final deadline date. Once completed applications have been received they will be officially registered and confirmed by e-mail.

In order to send applications, **candidates must:**

- Complete their applications on PICA, attaching **all documentation (in pdf/A format)** as required under article 5;
- **pay an administration fee of €30.** Candidates may make fee payment by clicking on “*Paga con Pago PA*” (see manual), selecting their preferred method of payment:
 - Credit/debit card;
 - Direct bank account payment;
 - Other methods of payment and payment systems which allow for PagoPA procedures.

Only for candidates resident abroad: if it is not possible for candidates to pay using the PagoPA system, payment will also be accepted by bank transfer payable to: Politecnico di Bari - via G. Amendola, 126/B - 70126 Bari. The bank details are: IBAN: IT59X0306904067100000300001 BIC: BCITITMM - description: "Application for PhD Programme in _____". Only candidates making payment in this way **are required, before deadline date, to attach a copy of the bank transfer payment and a declaration of failed administration fee payment** (“*Dichiarazione di impossibilità al pagamento del contributo di partecipazione alla procedura concorsuale mediante PagoPA*”), to be compiled using the form available on the Politecnico website (<https://www.poliba.it/it/dottorati-di-ricerca>).

Under no circumstances will refunds be issued (i.e. exclusion, withdrawal, absence, etc.). The sole fee payment of €30 does not in itself constitute an application in the absence of an online application form, even if payment is made before the deadline.

As part of their online application, candidates with disabilities (as per Laws 104 (5 Feb 1992) and 17 (28 Jan 1999) or specific learning disabilities (SLD / ASD as per Law 170 (8 Oct 2010) must attach National Health Service certification attesting to the diagnosis of said conditions and clearly state requests for any additional assistance and/or added time needed to complete the entrance examination.

Applicants who intend to apply for more than one PhD programme must submit separate applications for each, including separate payments for every application.

Applicants may modify, delete or add data and attachments, provided this is before the deadline date. After confirmation of receipt (and before deadline date), candidates may withdraw their application and make a new one.

After deadline date and/or after transmission of the application by PICA, no further additions or modifications can be made.

Verification of application validity, including correct completion of and compliance with self-certification requirements, will be carried out by the offices in charge after the deadline date.

Art. 5: Documents to attach to applications

Candidates must upload the following mandatory documentation to their online application, as per article 4. **Failure to do so will result in exclusion from the selection procedure:**

- **A CV** following the layout in the example provided by Politecnico di Bari at <https://www.poliba.it/it/dottorati-di-ricerca>.
- **A copy of a current, valid identification document.** Only the following documents will be considered eligible:
 - ID card (only if issued by an EU member state);
 - driving licence (only if issued by an EU member state);
 - in all other cases, a current passport (also non-EU citizens).
- **A degree qualification certification for first (Bachelor's) degrees and second (specialization/Master's) degrees (or 5-year Single Cycle degrees).** Candidates with qualifications awarded in Italy must attach the Politecnico form available at <https://www.poliba.it/it/dottorati-di-ricerca>, specifying:
 - final degree mark;
 - a list of all exams taken with their relative marks in both degree courses (or the Single Cycle course);
 - results of exams taken.**Candidates with a degree qualification awarded by a non-Italian university** must attach the following documents¹ to their application, as issued by the awarding body. This supersedes any form of self-declaration:
 - degree certificate or diploma showing final mark;
 - official transcript of exams taken during all university study programmes, showing all results;

¹**N.B.** These documents must be in Italian, French or English or translated into Italian or English and verified by an official Italian diplomatic or consular representative under the responsibility of the candidate. These should follow the guidelines set out in the document "PROCEDURES FOR ENTRY, RESIDENCY AND ENROLMENT OF INTERNATIONAL STUDENTS AND THE RESPECTIVE RECOGNITION OF QUALIFICATIONS, FOR HIGHER EDUCATION COURSES IN ITALY FOR THE ACADEMIC YEAR 2024/25" available at the Ministry link <https://www.studiare-in-italia.it/studentistranieri/>

- any other type of document which demonstrates the equivalence of qualifications with those required in this application call (Supplementary Diploma, “*Dichiarazione di Valore*” (statement of value) issued locally).
- **A PhD research proposal** which the candidate intends to develop during the programme, stating the scientific basis of the proposal, its research objectives and the methods to be used. **The proposal should be generally based on the topics outlined in article 2** and is assessed purely for the purposes of admission; the topics are not necessarily those which the candidate will follow during the programme, which will be agreed upon between the doctorate student and Supervisor and formally assigned by the Board.
N.B: Research proposals must use the format attached to this call document (“*Allegato Format*”). For the National Doctorate Research programme in “Autonomous Systems”, please use the specific format under “*Allegato Format DAUSY*”.
- **Only for those candidates applying for the Doctorate Research Programme in Heritage Planning: Knowledge, Tradition and Innovation** – a **motivational letter** (maximum 3,000 characters) outlining the candidate’s areas of research interest and justification for their choice of programme and, where possible, the research project proposed for the PhD programme.

It is also possible to attach the following **optional documentation** to the application for evaluation purposes:

- **An abstract of the thesis topic for Specialist/Master’s degree (or five-year Single Cycle degree)**, stating the title and name of thesis supervisor(s) (max 3,000 characters). **N.B:** this documentation, while not obligatory, allows for further evaluation of the candidate’s academic background; therefore its non-inclusion does not affect the formal process of application but may result in a lower evaluation for qualifications held.
- **Candidate thesis for Specialist/Master’s degree (or five-year Single Cycle degree)**
For **graduating students** whose thesis is not yet complete (see art.3), a draft version of the thesis which has been completed up to the time of application, including details of title and Supervisor. “Draft version” implies a version of the thesis text as completed by the graduating candidate up to the date of application, which, in terms of chapters and pages, allows the Selection Committee to evaluate its relative content and subject area. The abstract is not considered as a draft version of the thesis under any circumstances.
N.B: this documentation, while not obligatory, allows for further evaluation of the candidate’s academic background; therefore its non-inclusion does not affect the formal process of application but may result in a lower evaluation for qualifications held.
Graduating applicants should enclose a draft version of their thesis up to where it has been completed by the date of application submission, including the provisional title and name of thesis supervisor.
- **A self-certification declaration for any other qualifications held which are** deemed suitable for evaluation. This must be signed and dated (following the layout of the example provided at <https://www.poliba.it/it/dottorati-di-ricerca>), as per arts. 46 and 47 of Presidential Decree n. 445/2000.
- **Language certificates** demonstrating a knowledge of English which corresponds to at least B2 level. Only those candidates who are non-Italian citizens may attach certification which demonstrates knowledge of the Italian language.

- **Publications** related to activity carried out and shown on the candidate's CV. These must be in either Italian or English or translated into Italian or English on behalf of and under the responsibility of the candidate. Publications can be uploaded via the Research section of MIUR Login system or through direct attachment (maximum size of each file: 30 MB).
- **A reference letter.** After submitting their application, candidates will see an option for "**Lettere di referenza**", which can be used to request the compilation of a maximum of two reference letters. In order to complete this request, the institutional e-mail details of the referee must be inserted. If the referee agrees to issue a letter and conclude the procedure, the PICA system will notify the candidate. Subsequent to this phase, applications may no longer be modified, only withdrawn (using the withdrawal option on the system) with the option of making a new application. The candidate may, at any time, access the system to verify current application status. **N.B:** referees must complete their reference letters by the deadline time and date of this call (12:00 Italian time, 17 July 2024).

In accordance with Presidential Decree 445 (28 Dec 2000) and subsequent modifications and additions, all status, acts and qualifications attested by **Italian Public Administration bodies** may be provided using only a self-declaration certificate.

Art. 6: Grounds for exclusion

The following are grounds for exclusion from the PhD programme selection procedure:

- a. applications which do not comply with the format set out under article 4 of this call document;
- b. applications missing documents which are obligatory for the selection procedure as set out in art. 5 for each individual PhD programme;
- c. false or mendacious self-declaration statements relative to status / acts / qualifications;
- d. missing application fee payment by the deadline date of this call (art. 4).

Any candidates excluded from the selection procedure will be notified by Post-Lauream Office by email at the address provided to the PICA system. As such, candidates are reminded to ensure the e-mail address provided is correct and current. Other e-mail addresses will not be taken into consideration.

Art. 7: Entrance examination procedure

Admission to the PhD programmes is subject to an entrance examination designed to ascertain candidate preparation on general programme topics and their research aptitude and is aimed toward ensuring an accurate comparative evaluation of candidates.

The Selection Board will publish a list of candidates eligible for the oral examination in line with the criteria outlined in article 8. Prior to the examination, candidates will be notified of marks received in the evaluation phase via the Politecnico website.

Upon completion of oral examinations, the Selection Board will publish a list of candidates with their relative marks which will be posted on the Politecnico website in the "*Dottorati di Ricerca*" section.

Selection evaluation and oral examinations will commence on July 23 and conclude by August 3, 2024.

Interviews will be held **online**, details of which will be provided prior to the examination date via public notification on the Politecnico website in the "*Dottorati di Ricerca*" section (www.poliba.it). Candidates will be excluded from

the selection procedure if they are unable to provide identification or do not attend the oral interview.

All candidates must demonstrate a good knowledge of English. This can be certified with a recognised language qualification from an accredited examination board showing B2-level knowledge of the language, in line with the Common European Framework for the Knowledge of Languages. In the absence of certification, the candidate's English language level will be assessed during the oral examination.

Interviews may be held in Italian or in English.

Changes relating to the aforementioned dates or times **will be published on the Politecnico website** as an official notification.

No other form of notification regarding oral examinations will be sent to candidates.

Art. 8: Assessment of qualifications and interview

The Selection Board will assess candidates' qualifications and examinations with a **mark of up to a maximum of 100**. Each Doctorate research programme marking system is outlined below.

Doctorate research programmes with **two** evaluation phases:

PhD Programme	1. EVALUATION OF QUALIFICATIONS	2. ORAL EXAMINATION	MINIMUM PASS MARK
Mechanical and Energy Engineering (DRIME)	Min. 10; Max. 40	Min. 15; Max. 60	25
Management Engineering (DRIG)	Min. 10; Max. 40	Min. 15; Max. 60	25
Electrical and Information Engineering (DRIEI)	Min. 10; Max. 40	Min. 15; Max. 60	25
Risk, Environmental, Territorial and Building and Development (DSRATE)	Min. 10; Max. 40	Min. 15; Max. 60	25
Heritage Planning: Knowledge, Tradition and Innovation (CTI)	Min. 10; Max. 40	Min. 15; Max. 60	25
Smart and Sustainable Industry (SSI)	Min. 10; Max. 40	Min. 15; Max. 60	25
Change Management in Civil Engineering Infrastructures (CMCEI)	Min. 10; Max. 40	Min. 15; Max. 60	25

Doctorate research programmes with **three** evaluation phases:

PhD Programme	1. EVALUATION OF QUALIFICATIONS	2. EVALUATION OF RESEARCH PROPOSAL	3. ORAL EXAMINATION	MINIMUM PASS MARK
Engineering and Aerospace Science (DRISA)	Min. 10; Max. 20	Min. 10; Max. 20	Min. 30; Max. 60	50

Sustainability Engineering and Safety in Civil and Industrial Buildings (DRISS)	Min. 10; Max. 20	Min. 10; Max. 20	Min. 30; Max. 60	50
Autonomous Systems (DAuSy)	Min. 10; Max. 20	Min. 20; Max. 40	Min. 20; Max. 40	50

Admission to the subsequent phase of the selection procedure is subject to the attainment of the minimum pass mark of each phase shown for each of the PhD programmes.

Upon completion of the examination procedures, the Board will carry out an overall assessment and draw up an admission rankings list on the basis of the marks obtained by candidates in each part of the examination. **The assessment criteria for qualifications will be established by each Selection Board.**

Art 9. Selection Board and grant allocation

The Rector will appoint a Selection Board with a Rector's decree in line with art. 15 of Politecnico di Bari's Doctorate Research Programme (available on the Politecnico website) and in accordance with doctoral programme regulations for the PhD in Autonomous Systems.

The members of the Board will provide self-certification in line with art. 46 of Presidential Decree 445/2000, stating that:

- they will report any potential conflict of interest and/or reason for abstention and/or incompatibility with relation to their role;
- they have at no time had a criminal record for offences which bar them from public office duties, offences which affect professional morality or offences as set out in Legislative Decree no. 231/2001;
- they are unaware of any current legal proceedings against them;
- they will act with impartiality and carry out their duties with confidentiality, due care and attention and respect for current legislation as well as the founding principles of the Ethical and Behavioural Code of Politecnico di Bari.

Each Selection Board will issue draw up an examination report indicating, if required, the absence of suitable applications for one or more of the research topic(s).

A final ranking list for each doctorate programme is then compiled, based on results obtained.

Grants are allocated at the sole discretion of the Board of Professors (Collegio dei Docenti) for each doctorate programme, in consideration of the specific research topics and fundings, of the needed requisites and aptitudes of the candidates, as well as in consideration of conditions outlined in of art. 7 of Ministerial Decree 629/2024 and art. 8 of Ministerial Decree 630/2024.

Art. 10: Admission rankings and course eligibility

The Rector will issue a decree confirming his approval of the acts ("*Decreto di Approvazione Atti*") and publish the names of successful candidates by confirming the ranking lists and allocation of grant funding ("*Decreto Assegnazione Borse*").

Successful candidates are admitted to courses in the order of admission rankings until all available positions with grant funding have been assigned for each programme.

In cases where candidates have an identical result, gender balance will be considered, with preference given to the minority gender with higher ranked positions in the same list. If candidates are still at the same level, the younger of the candidates will be selected.

The general admission rankings list for successful candidates will be published online as an official notification on the *Albo Ufficiale* page of the Politecnico di Bari website www.poliba.it, as well as in the Doctorate Research Programme section.

Art. 11: Enrolment

ENROLMENTS

Candidates admitted to PhD programmes must enrol online following public notification of the procedures and conditions to follow. These are published online as an official notification on the *Albo Ufficiale* page of the Politecnico di Bari website www.poliba.it, as well as in the Doctorate Research Programme section. This notification will be an attachment of the Rector's "Approvazione Atti" Decree.

Candidates who fail to enrol as set out in the abovementioned notification will be considered as having waived their status as a successful candidate. This waiver will affect any subsequent entries on the admission ranking list and rulings which may arise as a result.

SUBSEQUENT ENTRIES AND RULINGS

The notification attachment to the Rector's Decree "Approvazione Atti" will outline the terms and procedures for subsequent entries and rulings.

Please note that candidates will be given a deadline to implement these procedures, after which failure to reply or comply with the terms will be considered as withdrawal from the rankings list.

Withdrawal from a PhD programme after enrolment procedures have been completed will entail a compulsory stamp duty payment of €16.

Art. 12: Obligations and rights of doctorate research students

Participation in the PhD programme is a full-time commitment subject to a specific discipline, in accordance with art. 10 of the Doctorate Research Programme Regulations issued as part of Politecnico di Bari Rector's Decree no. 288 (11 Mar 2022).

Doctorate Research students are hereby notified of their obligation to respect:

- the rules and conditions set out in the Doctorate Research Programme Regulations, issued as part of Rector's Decree no. 288 (11 Mar 2022);
- the Politecnico di Bari's Ethical and Behavioural Code, issued as part of Rector's Decree no. 582 (28 Sept 2018);
- all applicable rules and Politecnico di Bari regulations, including those pertaining to student fees as stipulated

by the Politecnico di Bari;

- the Quality Assurance systems for PhD programmes.

Specifically, as per art. 13 of the Politecnico di Bari PhD course regulations (Rectoral Decree 288/2022), doctorate students may be excluded in cases of:

- a) negative Board of Professors (Collegio dei Docenti) evaluation of activities carried out by the PhD student at any time of the doctoral programme;
- b) prolonged and unjustified absence from courses;
- c) failure to pass mid-term evaluation;
- d) failure to pass year-end evaluation.

In accordance with Ministerial Decrees nos. 629 and 630 (2024), beneficiaries of NPRR grant funding, both for Partnernariati Estesi and Centri Nazionali, must adhere to specific reporting requirements as set out in guidelines which will be made available to successful candidates.

Art. 13: Grant funding

Grants are paid in monthly instalments which are gross and subject to social security contributions paid by the beneficiary. The full amount is outlined under article 2 in the tables for each PhD programme.

Grants are annual and are renewable on the provision that the student has completed the programme of activities for the previous study year and has been admitted to the following year by Board of Professors deliberation.

As part of the financial resources of the Politecnico budget, **all** participating doctorate research students are guaranteed:

- a **research budget**, which is a fund for research activity (in Italy or abroad) of 10% of the total grant amount, with a 20% threshold for participants on the PhD programme for National Research for Autonomous Systems; reference guidelines on the use of research budget resources is available at the following link:
<http://www.poliba.it/it/dottorati-di-ricerca>
- **an increase for period spent abroad** of 50% of the monthly grant amount, allocated monthly if authorisation has been given by the programme Coordinator to carry out research activity abroad. This increase may be extended to a maximum of 12 months or 18 months for those PhD students in joint co-ordination with external bodies or those established according to the Politecnico di Bari Regulations for Doctorate Research Programmes.

N.B.

Participants should note that the **annual personal income limit** established by Politecnico di Bari as **compatible with grant allocation** is equal to **the gross amount of grant** as set out in article 2 for each PhD programme. This includes property income as well as any other source of recurring income, with the exception of income for occasional work. Should this limit be surpassed, the candidate will be obliged to refund any instalments already paid for the fiscal year in which the amount was exceeded.

Please note that as regards grants due to PhD candidates from other countries of origin following the selection procedures, in compliance with EU directives the time of allocation may be subject to the issue of a residence permit.

Art. 14: Fees and contributions

Upon enrolment on the programme, PhD students are subject to the current Student Fees and Contributions Regulations. These are available for consultation on the Politecnico website.

All PhD students are exempt from the all-inclusive contribution and are required to pay only the electronic revenue stamp fee and the ADISU Right to Higher Education fee, as well as adhering to the conditions set out in the Politecnico di Bari Fee Regulations.

The enrolment fee is €146, including a stamp duty fee of €16 and the first instalment of Regional Tax (€130).

ADISU fees are divided into three bands according to income, which are respectively €130, €160 and €180. Accordingly, based on the aforementioned ISEE figure, contributions will be invoiced in the private area of each PhD student.

All payments must be made using the PagoPA electronic payment system. Payments made this way will be automatically recognised by the Esse3 system.

In order to determine the total amount of Regional ADISU fees payable, Politecnico di Bari automatically acquires Equivalent Financial Situation Index certification (ISEE) from the National Social Insurance Agency (INPS) regarding subsidised benefits for higher education study. All declarations should be completed in full on the INPS website by 31 December of the calendar year of enrolment (e.g. for Academic Year 2024/25 the deadline date is 31 Dec 2024). Failure to provide declarations by the deadline date will result in the application of the full fee rate.

Therefore, it is strongly recommended that candidates apply **for ISEE certification as soon as possible to be able to qualify for these benefits.**

Up-to-date Doctorate Research student financial contributions are a compulsory condition required in order to access Politecnico services and maintain PhD student status.

Art. 15: Processing of personal data

As per current legislation, the private nature of information provided by candidates will be guaranteed. All data provided will be used only for purposes connected with selection procedures. For successful candidates, this data will also be used for purposes related to the PhD programme. For students completing the programme, data supplied will be used for purposes of employment opportunities. All data treatment is in compliance with current regulations as per European General Data Protection Regulations EU2016/679.

Under arts.15-18 of the abovementioned Regulations, candidates have the right to access their personal data as well as request modifications, additions and cancellations. Candidates may also request limits for their data treatment by contacting the Politecnico di Bari at rpd@poliba.it.

In all cases, by participating in the selection process applicants give their implied consent for the publication of their data, including examination results, on the Politecnico di Bari website, as per the abovementioned Law.

In accordance with Law 241 (7 Aug 1990) and Presidential Decree 184 (12 Apr 2006) and subsequent modifications and additions, any party with a related legal interest may have access to the selection procedure documentation, in line with guidelines set out under current legal rules. Accordingly, any documentation provided by applicants may be made available for consultation by other candidates.

Art. 16: Procedural supervisor

The Procedural Supervisor for all selection proceedings is Simona Del Vecchio, Politecnico di Bari Research, International Relations and Postgraduate Office, whose contact details are as follows; post-lauream@poliba.it, telephone (+39) 080 596 2229 / 2201 / 2525 / 2068.

Art. 17: Regulations

For all conditions not specified in this Call document, please refer to current regulations as well as those outlined in the Politecnico di Bari's Regulations for Doctorate Research Programmes, issued as part of Rector's Decree no. 288 (11 Mar 2022).

This application call is published on the website of the Italian Ministry of Universities and Research and that of Euraxess, as well as the *Albo Ufficiale* page of the Politecnico di Bari's website (www.poliba.it) and the *Dottorati di ricerca* section of the same website.

Bari, 12 June 2024

Prof. Francesco CUPERTINO

Rector, Politecnico di Bari