



CALL FOR APPLICATIONS FOR THE AWARD OF RESEARCH FELLOWSHIPS  
Regulation on Research Fellowships pursuant to Italian Law no. 240/2010  
Politecnico di Bari, issued by Rectoral Decree no. 252 of 05/07/2016

D.R. n. 521/2016

### **Purpose**

Applications are invited for the selection running at: Department of Electrical and Information Engineering of the Politecnico di Bari for the award of:

-n. 1 professional grant research fellowship, for the execution of research activities within the project entitled: *“Analysis and optimization of monitoring networks and indices for the evaluation of structural and energetic performances of buildings”*, according to the annexed Activity Programme:

*The research activity involves the study of optimization systems, aimed to the optimal integration of devices for the supervision and control of nanogrid with the buildings in the urban environment. The activities to be developed will relate to the analysis and optimization of the building system and the identification of the indices for the assessment of structural and energy performance of buildings finalizing the research to create a monitoring that can provide useful information about the energetic and structural state of the building.*

*This monitoring system will have to interact with the energy router in order to control energy flows in both ordinary condition that emergency due to an alert of civil protection. Activities concerning the following aspects should be developed: state of art analysis, system architecture definition, technological infrastructure identification, communication protocol selection, signal processing, control and modelling strategy implementation. Researches to be conducted should also investigate ancillary services and international approved guidelines.*

- n.1 professional grant research fellowship, for the execution of research activities within the project entitled: *“Control methodologies and tools for the energy router applied to micro/nanogrids”*, according to the annexed Activity Programme:

*The research involves the development of tools and optimization methodologies and data analysis which should be carried out in real time by the energy router at micro/nanogrid level. The research activities will focus on the definition of decision-making systems, tools and optimization methodologies and data analysis to be integrated in the application logic. The approach should be implemented in real-time by a single energy router, or in collaboration with the nearest energy routers (optimization of an energy router network).*

.- n.1 professional grant research fellowship, for the execution of research activities within the project entitled: *“Technical/economic optimization of an energy router network and cloud computing”*, according to the annexed Activity Programme:

*The research is aimed at the technical/economic optimization of energy router network and cloud computing and concerns the study of optimization functions and architectures to be adopted for monitoring and control of micro/nanogrids by means of the Energy Router. Possible activities deal with: managing data exchanges between field devices, the energy router and the cloud, developing optimization algorithms (optimal control, non linear programming, dynamic programming, mixed integer non linear problems, etc.), monitoring of LV nanogrids, dynamic update and verification of system parameters, formulating forecasting algorithms based on historical data and real-time measurements*

-n.1 professional grant research fellowship, for the execution of research activities within the project entitled: “*Design of power electronics devices for the micro/nanogrids*”, according to the annexed Activity Programme:

*This research activity concerns the design and implementation prototype of actuator devices for the energy router optimization strategies. It will be carried out an analysis of the state of the art about power electronics devices, aimed at verifying the technical and economic feasibility and the design of the device. The design of the prototype will follow this preliminary phase*

-n. 1 professional grant research fellowship, for the execution of research activities within the project entitled: “*Automated Demand Response systems*”, according to the annexed Activity Programme:

*The first research activity is related to ADR systems applied to nanogrids. In detail, the research aim is the definition of innovative system architectures and methods suitable to be adopted together with an Energy Router. Activities concerning the following aspects should be developed: state of art analysis, system architecture definition, technological infrastructure identification, communication protocol selection, signal processing, control and modelling strategy implementation. Researches to be conducted should also investigate ancillary services and international approved guidelines, such as the “OpenADR” standard.*

n.1 professional grant research fellowship, for the execution of research activities within the project entitled: “*Monitoring and control of nanogrids in residential sector*”, according to the annexed Activity Programme:

*This research activity concerns the study of optimization functions and architectures to be adopted for monitoring and control of nanogrids in residential sector by means of the Energy Router. Possible activities deal with managing data exchanges between field devices, energy router and cloud, developing optimization algorithms (optimal control, non linear programming, dynamic programming, mixed integer non linear problems, etc.), monitoring of LV nanogrids, dynamic update and verification of system parameters, formulating forecasting algorithms based on historical data and real-time measurements.*

n.1 professional grant research fellowship, for the execution of research activities within the project entitled: “*Monitoring and control of nanogrids in tertiary sector*”, according to the annexed Activity Programme:

*This research activity concerns the study of optimization functions and architectures to be adopted for monitoring and control of nanogrids in tertiary sector by means of the Energy Router. Possible activities deal with managing data exchanges between field devices, energy router and cloud, developing optimization algorithms (optimal control, non linear programming, dynamic programming, mixed integer non linear problems, etc.), monitoring of LV nanogrids, dynamic update and verification of system parameters, formulating forecasting algorithms based on historical data and real-time measurements.*

The call for applications for the research fellowship issued pursuant to the University Regulation issued by Rectoral Decree (D.R.) no. 252/2016.

The activities shall be carried out under the supervision of a tutor, Scientific Responsible Prof. Massimo La Scala in a non-subordinate relationship with no set working hours.

The main place of work will be: Department of Electrical and Information Engineering of the Politecnico di Bari of the Politecnico di Bari, VIA ORABONA,4 , BARI, ITALY

### ***Requirements for candidacy***

The selection is open to candidates in possession of the following qualification:

- Degree in civil engineering/construction, for the professional grant research fellowship, entitled "*Analysis and optimization of monitoring networks and indices for the evaluation of structural and energetic performances of buildings*".
- Degree in Engineering, physics, mathematics, computer science for the professional grant research fellowships entitled  
"*Control methodologies and tools for the energy router applied to micro/nanogrids*"  
"*Technical/economic optimization of an energy router network and cloud computing*"  
"*Design of power electronics devices for the micro/nanogrids*".
- Degree in Electronic Engineering, for the professional grant research fellowship, entitled "*Automated Demand Response systems*".

- Degree in Electrical Engineering for the professional grant research fellowships entitled *“Monitoring and control of nanogrids in residential sector”* *“Monitoring and control of nanogrids in tertiary sector”*

Candidates must possess the admission requirements on the deadline for submission of applications laid down in this call.

The selection is not open to any persons who are related by blood or by marriage up to the fourth degree, to a professor working in the department or structure for which the call is issued, or to the Rector, Director General or a member of the Board of Governors of the University.

The selection is also not open to anyone who has held research fellowship contracts with any institution, pursuant to Italian Law no. 240/2010, for a period which, summed to the foreseen duration of this contract, exceeds a total of 6 years, excluding any period in which the contract coincided with a PhD without scholarship, for the maximum limit of the legal duration of the PhD programme.

Furthermore the selection is not open to anyone who has had research fellowship or fixed-term researcher contracts at the Politecnico di Bari or any other state-funded, private-funded or distance-learning Italian university pursuant to articles 22 and 24 of Italian Law 240/2010, or with any other body listed in paragraph 1 of Art. 22 of Italian Law 240/2010 for a period which, summed to the foreseen duration of this contract, exceeds a total of 12 years, even if not consecutive. For the purposes of the duration of the above-described periods, in compliance with the laws in force any periods of maternity or sick leave shall not be calculated.

### ***Application***

The application for selection, in a sealed envelope and bearing the title indicated in the call for proposal for the Research Fellowship, addressed to the magnificent Rector of Politecnico di Bari, via Amendola 126/b, 70126 Bari, Italy, drawn up on unmarked paper (according to the annexed model), shall be **delivered not later than 16/12/2016**

Any applications received beyond the deadline will not be accepted.

The application may be presented:

- Shipping by registered mail with return receipt, not later than 16/12/2016 at: Politecnico di Bari, Via Amendola n. 126/B, 70126 Bari (Italia);
- Shipping by e-mail PEC at: didatticaericerca.poliba@legalmail.it not later than 16/12/2016.
- delivered by hand at Protocol Office of Politecnico di Bari, Via Amendola, 126/b - 70126 Bari – not later than 16/12/2016 at the following times: Monday. – Thursday From 10.00 to 12.00, Tuesday from 15,00 to 16,30.

The structure shall assume no liability for the non-delivery of correspondence which is not the result of errors made by its own staff.

In the application the candidates must, under their own responsibility, indicate:

- surname and name;
- date and place of birth;
- nationality;
- residence and chosen address for correspondence for the purposes of this selection;
- that they do not have a criminal record and are not involved in any current criminal proceedings (or if so, state which);
- that they possess the qualification of..... in ....., obtained from..... on (date)..... (indicate the qualifications required as stated in article 2 of the call for applications

or

- that they possess an academic qualification obtained abroad, which is deemed equivalent.

The candidates in possession of a qualification obtained abroad must annex to their applications a translation into Italian of their foreign qualification, accompanied by a sworn statement that it is a faithful translation of the original certificate.

The foreign qualification may be declared admissible by the Evaluation Board, solely for the purposes of admission to the selection procedure.

In case of award, the winning candidates having obtained their qualification in a country outside of the European Union, must provide the Structure, in the same manner as laid down for the presentation of applications, the official translation with a declaration of value of the foreign qualification issued by the competent diplomatic representation or Italian consulate in their home country, in accordance with the applicable laws.

Candidates must enclose the following with their applications:

- their scientific and professional curriculum vitae;
- thesis;
- certificates of all qualifications to be assessed according to art. 3 of this call for applications. Academic and professional qualifications issued by Italian public administrations must be self-certified or submitted in an unstamped photocopy, as provided for in art. 15 of Italian law no. 183/2011, by way of a simple declaration of certification pursuant to articles 46 and 47 of Italian Presidential Decree (DPR) 445/2000.

Candidates are admitted to the selection procedure with reserve.

At any time, even after participation in any tests, the Administration may, with justification, exclude them from the selection procedure. The concerned candidate will be notified of such exclusion.

### ***Comparative assessment of the candidates and the Evaluation Board***

The candidates will be assessed comparatively by a Commission appointed by a Rectoral Decree, and formed by three professors of Politecnico di Bari.

The selection procedure focuses on the examination of the selection criteria laid down in advance by the Commission, the candidates' scientific-professional curriculum and the scientific work and publications resulting from the documents enclosed with the application as well as an interview, aiming to verify the suitability of the candidate for carrying out the research programme.

During the interview, the Commission will also verify the candidates' knowledge of the foreign language(s) required in the announcement on relevant sectoral topics.

Only for candidates residing or domiciled outside the Italian territory, upon their request, the oral exam may be held also by using Skype. These applicants have to prove their identity to Commission by showing the colour ID document already attached in the application. In that case these candidates will also have to produce, together with the documentation pursuant to art. 3, Annex C duly filled.

Notice about date and location where the oral examination will be published on the online register praetorian (Albo pretorio) of the Politecnico of Bari.

To be admitted for interview, the candidates must show a valid ID document.

At the end of the selection procedure, the Board will draw up a list of candidates with relative scores, and the final ranking of the selection will be published on Politecnico's online register praetorian by a Rectoral Decree.

If two candidates receive the same scores, preference will be given to the younger candidate. The successful candidate has to send to Protocol office of Politecnico di Bari, Via Amendola n. 126/B, 70126 Bari, within 15 days starting from the day after of final ranking publication the following documents:

- a) declaration of acceptance of the research fellowship, by filling up the form available on [www.poliba.it/Ricerca/Assegni di Ricerca](http://www.poliba.it/Ricerca/Assegni di Ricerca);
- b) photocopy of ID documents
- c) photocopy of Italian fiscal code (if available).

#### ***Duration and amount of the contract***

The contract has a duration of 12 months and may be renewed and/or extended in the terms laid down in the University Regulation concerning research fellowships, as issued by D.R. no. 252/2016.

The gross amount of the research fellowship contract is € 19.367,00 (professional) per annum. The amount is exempt of withholding tax and includes all statutory social security charges the Research Fellow is subject to.

The amount will be paid in deferred monthly payments.

#### ***Non-accumulation, incompatibility, leave***

1. The position of research fellow is incompatible with the following positions:

- a) fixed-term and full-time staff employed by the bodies listed in art. 22 para. 1 of Italian Law no. 240/2010;
- b) persons employed by any private bodies, on a fixed term, permanent or part-time basis; For staff of any Public Administration other than those listed in letter a) refer to the provisions of point 2 below;
- c) persons with fixed-term research contracts with any university;
- d) adjunct professors with official teaching responsibilities in degree programmes or specialisation schools in any university;
- e) persons enrolled in any first, second or single cycle degree programmes, PhD programmes with scholarships or specialisation school. Self-funded research contracts are compatible with enrolments in non-medical specialisation schools, for which no study grant or contract is foreseen or master's degree only where authorised in advance by the structure Director, and having sought the opinion of the tutor.
- f) persons awarded research fellowships at any other body.

2. Employees of public administrations other than those listed in point a) with a fixed-term, permanent or part-time contract shall take unpaid leave of absence for the whole period of the research contract.

3. Freelance professional activities are compatible with the research fellowship contract where authorised in advance by scientific responsible and having verified that the activities in addition to the research fellowship do not prejudice the regular execution of the contract.

4. The accumulation of the research fellowship contract with study grants awarded for any purpose is not permitted, with the exception of those granted by national or foreign institutions for the purposes of integrating the research activities with study periods abroad.

5. The above requirements must be possessed from the moment of entry into force of the contract. The winning candidate shall sign a specific affidavit undertaking to notify the department of any variations in the declared situations as soon as they occur.

#### ***Reference norms***

For any matters not laid down in this call for applications, refer to the "Politecnico di Bari Regulation for the awarding of grants for cooperation in research activities" by Rectoral Decree no. 252 dated 05.07.2016 and other statutory regulations in force.

The personal data provided by the candidates in their applications, pursuant to articles 7 and 13 of Italian Legislative Decree no. 196 of 30.06.03, shall be processed for the purposes of managing the selection procedure and the contract.

This call for applications will be published on the Politecnico di Bari Portal, on the MIUR website.

Date, 01.12.2006

The Rector  
Prof. EUGENIO DI SCIASCIO

