

(BL121/2025)

### Scientific Initiation Studentships

Applications are open for one Scientific Initiation Studentships, within the framework of DEI of IST, under the following conditions:

**Scientific Area:** Computer Architecture and Operating Systems, Programming Methodology and Technology, Information Systems.

**Admission Requirements:** Undergraduate or master's students in Computer Engineering and Informatics, Electrical and Computer Engineering, or similar fields. Candidates with the appropriate profile should have an interest in and experience with work related to computer systems administration and the development of solutions in parallel processing, information systems, computer networks, cluster and cloud computing, among others. Candidates must have good communication skills, as their tasks will include providing user support. Proficiency in Portuguese, both spoken and written, is required. Candidates must not have any outstanding courses (disciplinas em atraso).

#### Workplan:

- **System and Infrastructure Administration:** this area of work encompasses the strategic oversight, configuration, and operational management of the entire RNL infrastructure. Far from being a simple clerical task, this administration function is an engineering discipline focused on ensuring the security, integrity, and efficiency of all active systems and services. This requires a deep understanding of system architecture and involves the expert configuration of core network services like DNS and VPNs, the management of the physical and virtualized server environments hosting RNL's applications, the rigorous implementation of security policies and access controls to harden against threats, and the continuous monitoring of system health to guarantee service availability and proactively optimize performance.
- **System and Infrastructure Maintenance:** this workstream involves the set of engineering practices dedicated to ensuring the long-term reliability, security, and operational viability of the RNL infrastructure. This maintenance is a structured process designed to preserve and enhance technological assets, extending far beyond simple reactive repairs. It includes preventive actions, such as applying security patches and performing health audits to preempt failures; corrective measures, which involve systematic troubleshooting and root cause analysis to engineer permanent solutions for any faults; and adaptive modifications to update systems and ensure they remain compatible with the evolving technological environment, thereby preventing obsolescence.
- **System and Infrastructure Development:** this area focuses on the evolution, enhancement, and expansion of RNL's IT capabilities through the engineering and implementation of new technologies. The development of the infrastructure is a proactive process of building for the future, which involves designing and deploying new systems and network segments to support organizational growth. A key component of this is process engineering through the creation of custom automation scripts that streamline tasks, reduce human error, and enable more scalable management. Furthermore, this development includes the strategic integration of new technologies, such as cloud services or containerization platforms, to enhance the infrastructure's overall capability, resilience, and competitive advantage.
- **Strategic Study and Solution Development for IT Management:** This component represents the research and development (R&D) and strategic planning function for the RNL infrastructure, a forward-looking activity focused on continuous improvement and long-term alignment with organizational objectives. It involves proactive research and evaluation of emerging industry trends and new security paradigms to

assess their potential benefit to RNL. To validate these findings, this function includes designing and prototyping proof-of-concept solutions in controlled lab environments to analyze performance and suitability before any full-scale commitment. Ultimately, this work culminates in the formulation of long-term strategic roadmaps, ensuring that all administration, maintenance, and development efforts are cohesive and purposefully guided toward a modern, robust, and effective technological future.

Note that “administration”, “maintenance”, and “development” should be understood in the context of Computer Science and Engineering activities and not as mere system management tasks.

**Legislation and Regulations:** Statute of Scientific Research Fellow, approved by Law nr. 40/2004, of August 18, as worded by Decree-Law nr. 123/2019, of August 28; IST Regulation for Research Studentships and Fellowships, available on <https://drh.tecnico.ulisboa.pt/bolseiros/documentos-e-legislacao/>.

**Workplace:** The work will be carried out in person at the RNL laboratories – Rede das Novas Licenciaturas, in the Department of Computer Engineering on the IST campus at Alameda, Lisbon, under the scientific supervision of Professor David Manuel Martins de Matos.

**Duration:** The research fellowship(s) will have the duration of 12 months. It’s expected to begin in October 2025, and not renewable.

**Monthly maintenance allowance:** the amount of the monthly maintenance allowance is €651,12, being the payment method of the Fellow by wire transfer.

**Selection methods:** The selection methods to be used will be as follows: curriculum evaluation (state of the study plan), interview, and knowledge test (written test), with respective weightings of 20%, 30%, and 50%.

**Composition of the selection Jury:** Prof. David Manuel Martins de Matos (President); Prof. Daniel Jorge Viegas Gonçalves; Prof. Luís Manuel Marques da Costa e Caires

**Announcement/ notification of the results:** The final evaluation results will be communicated to all applicants by email.

**Deadlines and procedures of complaint and appeal.** A complaint may be lodged from the final decision, or an appeal to the President of IST, within 15 working days counted from the respective notification.

**Application deadline and formalization:** The call is open from September 22 until September 26, 2025.

It is mandatory to formalize applications with the submission of the following documents: i) B1 Form – Fellowship application (<http://drh.tecnico.ulisboa.pt/bolseiros/formularios/> ); ii) *Curriculum Vitae*; iii) academic degree certificate, where applicable; iv) proof of enrollment at an academic degree course or at a course that does not award an academic degree; v) motivation letter;

Applications must be submitted to the email: [david.matos@tecnico.ulisboa.pt](mailto:david.matos@tecnico.ulisboa.pt)