

## FRAMEWORK PROGRAMME OF EARLY STAGE RESEARCHER TRAINING<sup>1</sup>

### 1. BASIC DATA

Mentor's name and surname	<b>Marko Jesenik</b>	Mentor's register number at <a href="#">ARIS (SICRIS)</a> :	<b>12623</b>
Mentor's e-mail:	marko.jesenik@um.si	Mentor's tel. no.:	02 220 7045
Research programme (RP) leader's name and surname:	Marko Jesenik	RP leader's register number at <a href="#">ARIS (SICRIS)</a> :	12623
Title of research programme:	Applied electromagnetics	RP's Register number at <a href="#">ARIS (SICRIS)</a> :	P2-0114
Research organisation (RO) of University of Maribor, where training shall be conducted:	Faculty of Electrical Engineering and Computer Science	RO Register number at <a href="#">ARIS (SICRIS)</a> :	0552-0796
Research field according to <a href="#">ARIS classification</a> :	2.12 Engineering/Electrical devices	Research field according to Ortelius classification (EURAXESS)	15.11

### 2. DEFINITION OF RESEARCH PROBLEM AND GOALS OF DOCTORAL RESEARCH<sup>2</sup>

Starting point of research task of the early stage researcher and its position in the research programme, where the mentor is included, work hypothesis, research goals and foreseen result with emphasis on an original contribution to science:

The main task of a young researcher will be the development of an optimal design procedure for the selected electromagnetic device. Based on numerical calculations using the Finite Element Method, the researcher will investigate the influence of various parameters and models on the design and functionality of the device. The research aims to establish a new efficient approach in the design of electromagnetic devices, including numerically supported calculations, the inclusion of new materials and models, optimisation concerning the desired criteria, automatic calculation of all relevant parameters, etc. On the other hand, with the proposed approach in design, an accurate

<sup>1</sup> Term early stage researcher (ESR) is written in male form and used as neutral for women and men.

<sup>2</sup> Research and study programme of training have to harmonise with contents of the research programme, where the mentor is a member.

assessment of the actual electromagnetic conditions in the device under consideration can be obtained, which means that the construction of such designed devices would be more efficient.

### 3. STUDY PROGRAMME

Foreseen study programme, to which early stage researcher shall be enrolled in academic year 2024/2025:

Electrical Engineering

### 4. DESCRIPTION OF WORK AND TASKS

During the research activity, the candidate will work on the development of the Computer-Aided Design of a selected electromagnetic device. From the researcher` side, it is expected to be capable of working with the special computer programs and involve advanced optimisation procedures in the design process. For this purpose, 2D and 3D electromagnetic field solvers based on the Finite Element Method will be used, along with Matlab`s optimisation toolbox.

However, in the first year of training, the candidate would have to be focused primarily on PhD school obligations and gathering literature. The second year will be dedicated to both study and research activities, where the candidate is expected to gain his/her first results, which should be published at an international conference and in a journal with an impact factor. In the third and fourth year, it is planned to complete all study obligations, submit and defend the PhD thesis.

Job description and tasks from UM systematization:

- Implements projects of scientific and research work.
- Participates in the design of research programs.
- He cooperates professionally with clients of research assignments.
- Prepares research reports and studies.
- Monitors and coordinates research work in accordance with funding agreements.
- Take care of safe and healthy work.
- Organizes and instructs employees and students on the use of personal protective equipment and other safety measures.
- Performs other related tasks as directed by the supervised employee.
- Participates in working and standing commissions of UM bodies and members or other members.
- Replaces co-workers and supervisor in his absence (by proxy).
- Participates in annual and other stock-taking.
- Performs other related work on behalf of superiors.

### 5. REQUESTED LEVEL OF EDUCATION

VII / 2. tariff group

### 6. REQUESTED FIELD OF EDUCATION

Electrical engineering, computer science, informatics, pedagogical, technical, natural sciences

#### 7. KLASIUS SRV

Level 7: Second-level higher education and similar education / second-level higher education and similar education

#### 8. KLASIUS P

522 - Electrical engineering and energy  
523 - Electronics and automation  
481 - Computer science

#### 9. REQUESTED KNOWLEDGE

Computer skills: MS Windows, Word, Excel, Internet, email, el. business

#### 10. REQUESTED SPECIAL REQUIREMENTS

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#### 11. REQUESTED LANGUAGES

Active knowledge of one world language (preferably Slovene or English language)

#### 12. REQUESTED WORK EXPERIENCE

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#### 13. FORESEEN POSTDOCTORAL TRAINING

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Mentor's signature:

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Research programme leader's signature:

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Name and surname of Dean or

authorised person<sup>3</sup>:

Prof. dr. Gorazd Štumberger

Signature of dean or authorised person:

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Place and date: **Maribor, 1.3.2024**

Kliknite ali tapnite tukaj, če želite  
vnesti besedilo.

Kliknite ali  
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Stamp:

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<sup>3</sup> The training program is signed by the dean of the member where the ESR's employment and training will take place.