

Opis raziskovalnega dela (Research work description)

1. Članica UL (UL member):

Fakulteta za matematiko in fiziko

2. Ime, priimek in elektronski naslov mentorja/ice (Mentor's name, surname and email):

Andreja Šarlah, andreja.sarlah@fmf.uni-lj.si

3. Raziskovalno področje (Research field):

Specialna didaktika – Izobraževalna fizika (Special didactics – Physics education research)

4. Opis raziskovalnega dela (Research work description):

Vključuje morebitne dodatne pogoje, ki jih mora izpolnjevati kandidat/ka za mladega raziskovalca/ko, ki niso navedeni v razpisu za mlade raziskovalce (It includes any additional conditions that the candidate for a young researcher must meet, which are not listed in the call to tender for young researchers.).

Slov.: Raziskovanje učenja in poučevanja specifičnih tem fizike z na študenta osredinjenim pristopom

Mladi raziskovalec se bo v okviru doktorskega dela seznanil z raziskovalnimi izzivi na področju izobraževalne fizike. Ukvarjal se bo z raziskavami učenja in poučevanja specifičnih tem fizike z na dijaka oziroma študenta (v nadaljevanju študenta) osredinjenim pristopom. Kandidat bo proučeval, kako lahko na študenta osredinjen pristop preoblikuje učenje in poučevanje različnih fizikalnih vsebin in kako se pri študentih oblikuje znanje in razumevanje pojavov s specifičnega področja. Poudarek bo na raziskavah učenja in poučevanja aktualnih tem, kot so biofizika in fizika podnebnih sprememb, ali na razvoju in raziskavah učinkovitosti laboratorijskih vaj odprtega tipa pri pridobivanju znanja, razvoju kompetenc znanstvenega dela in odnosu do fizike in znanosti. Mladi raziskovalec bo deloval v skupini za izobraževalno fiziko UL FMF in sodeloval z drugimi doktorskimi študenti in strokovnjaki za poučevanje fizike ter njihovimi mednarodnimi partnerji iz Italije, Nemčije, Nizozemske, Švedske in ZDA. Pri delu bo sodeloval tudi z nekaterimi slovenskimi gimnazijami in fakultetami. Rezultati doktorskega dela bodo uporabljeni za izboljšanje poučevanja in učenja fizike ter izboljšanje našega razumevanja, kako se pri učenju gradi znanje in kako potekajo konceptualne spremembe.

Zaželen je magisterij iz fizike. Zaželene so tudi izkušnje z raziskavami v izobraževalni fiziki ali izobraževanju na splošno, predvsem pa navdušenje nad fiziko in pridobivanjem znanja. Zaželeno je znanje slovenskega jezika.

Eng.: Research of learning and teaching of specific topics in physics using student-centered approaches

The doctoral candidate will explore research challenges in physics education. The candidate will explore learning and teaching specific physics topics with student-centered approaches. The focus will be on how student-centered instruction can transform the learning and teaching of specific physics topics and how students develop knowledge and understanding of specific physical phenomena. In particular, the research will emphasize contemporary topics such as biophysics and the physics of climate change, or the development and evaluation of open-ended labs, assessing their effectiveness in knowledge acquisition, scientific skill development, and attitudes toward physics and science. The young researcher will work within the Physics Education Research Group at the UL FMF and collaborate with other doctoral candidates, physics education experts and their international partners from Italy, Germany, the Netherlands, Sweden, and the USA. They will also engage with Slovenian high schools and faculties. The research findings of the doctoral work will contribute to enhancing physics teaching and learning and improving our understanding of knowledge construction and conceptual changes in physics.

A master's degree in physics is preferred, along with experience in physics education research or education in general. Most importantly, the candidate should have a passion for physics and knowledge acquisition. Proficiency in Slovenian is desirable.

5. Priloge, ki jih kandidat priloži k prijavi (Documents that the candidate submits with the application):

☒ **diplomska listina/potrdilo o zaključku študijskega programa** (diploma certificate for study programme, with which the candidate has enrolled/ will enroll in a doctoral degree programme)

☒ **priloga k diplomii/ potrdilo o opravljenih obveznostih** (official transcript of all the grades for study programme, with which the candidate has enrolled/will enroll in a doctoral degree programme)

☒ **potrdilo o do sedaj opravljenih obveznostih z ocenami študijskega programa, s katerim se bo kandidat prijavil na študij** (*official transcript of all the grades the candidate has received so far for the study programme, with which the candidate will enroll to a doctoral degree programme*)

☒ **motivacijsko pismo** (*motivation letter*)