

Strengthening Teaching Competences  
in Higher Education  
in Natural and Mathematical Sciences



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Preliminary analysis of  
competences of university teachers  
at Faculty of Sciences, UNS

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- General information about University of Novi Sad
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- 14 faculties and 3 scientific institutes in 4 Central European University cities
- In European Capital of Culture 2021
- In European Youth Capital 2019
- 50,000 students and 5,000 staff
- Comprehensive university providing nearly all fields of science and higher education
- The University offers around 350 accredited study programs at the level of Bachelor, Master, Specialist and Doctoral studies, carried out at its Faculties and within its Centers for Interdisciplinary and Multidisciplinary Studies



The University that connects four historic cities of the Autonomous Province of Vojvodina,  
in the north of the Republic of Serbia:

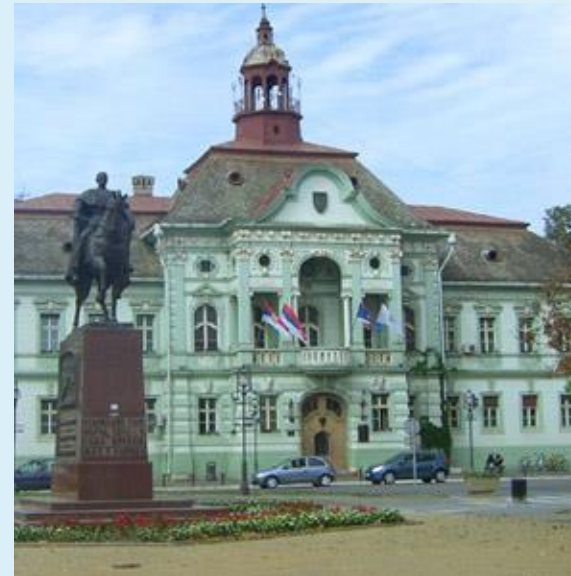
## NOVI SAD



## SOMBOR



## SUBOTICA



## ZRENJANIN



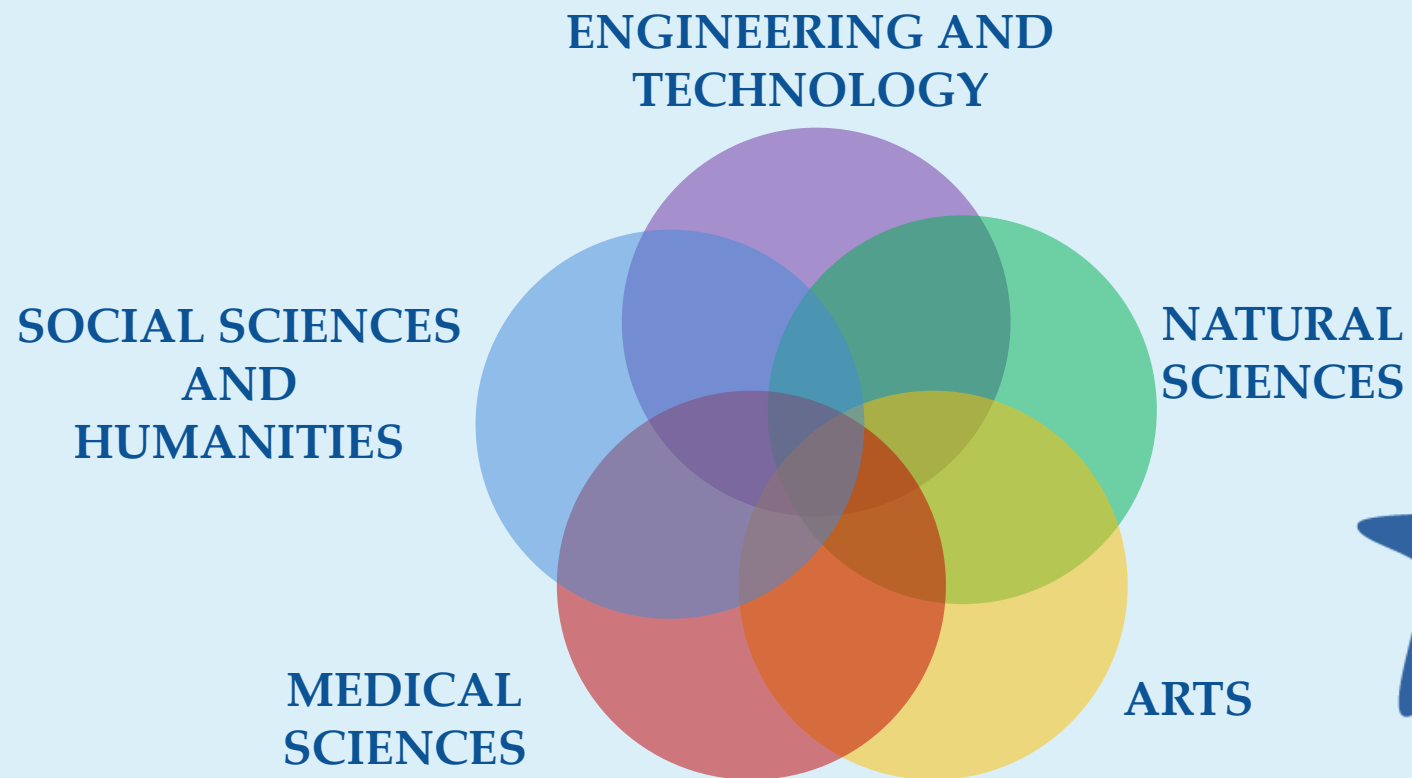


UNIVERSITY OF NOVI SAD

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# GENERAL INFORMATION

*Comprehensive University*



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## 14 faculties

- FACULTY OF PHILOSOPHY in Novi Sad
- FACULTY OF AGRICULTURE in Novi Sad
- FACULTY OF LAW in Novi Sad
- FACULTY OF TECHNOLOGY in Novi Sad
- FACULTY OF ECONOMICS in Subotica
- FACULTY OF TECHNICAL SCIENCES in Novi Sad
- FACULTY OF MEDICINE in Novi Sad
- FACULTY OF SCIENCES in Novi Sad
- ACADEMY OF ARTS in Novi Sad
- FACULTY OF CIVIL ENGINEERING in Subotica
- “MIHAJLO PUPIN” TECHNICAL FACULTY in Zrenjanin
- FACULTY OF SPORT AND PHYSICAL EDUCATION in Novi Sad
- FACULTY OF EDUCATION in Sombor
- TEACHER TRAINING FACULTY IN THE HUNGARIAN LANGUAGE in Subotica



# Preliminary analysis of general teaching competences of university teachers at Faculty of Sciences, University of Novi Sad

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- Competences in psychology, pedagogy and methodology in teaching (so called PEPSI competencies)

Analysis of bachelor and master programs (and diploma programs before Bologna declaration):

- Majority of young teaching staff finished 3+2 program (bachelor in Mathematics or Science and master in Mathematics or Science–Theoretical mathematics or Applied mathematics (Science)).
- Possibility of choice of PEPSI courses, but usually students who wanted to become university teachers do not chose them, but prefer to chose some narrow courses from their topics (in order to prepare master or PhD thesis).
- Only programs for teachers in Mathematics or Science (5 years integrated programs) have incorporated courses giving competence in psychology, pedagogy and methodology.



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# Preliminary analysis of general IT competences of university teachers at Faculty of Sciences, University of Novi Sad

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- Analysis of bachelor and master programs (and diploma programs before Bologna declaration) regarding IT competences
- Majority of young teaching staff finished 3+2 program (bachelor in Mathematics or Science and master in Mathematics or Science–Theoretical mathematics or Applied mathematics (Science)).
- All teaching staff had only one obligatory course in programming and possibility of some optional courses.
- Courses in IT methods in teaching and learning do not exist at any level of studies
- Nevertheless, more than a half of young teaching staff uses some IT methods for communication (e.g. Moodle platform)

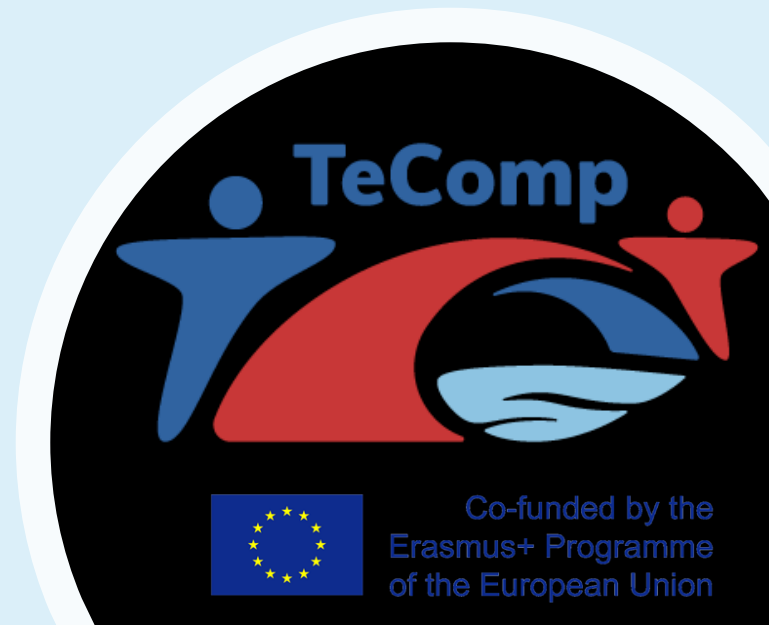




# Preliminary analysis of foreign language competences of university teachers at Faculty of Sciences, University of Novi Sad

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- Analysis of bachelor and master programs (and diploma programs before Bologna declaration) regarding language competences
- Majority of young teaching staff finished 3+2 program (bachelor in Mathematics or Science and master in Mathematics or Science–Theoretical mathematics or Applied mathematics (Science)).
- There are no obligatory language courses, only 2 optional courses in English
- It is possible that a young member of teaching staff never had a foreign language course and there are persons in teaching staff that do not speak any foreign language.
- Nevertheless, more than 90% of young teaching staff can use English in every day life (reading, writing papers and discussing research topics with international colleagues)



# Some comments/problems

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- Regarding the lack of competencies in pedagogy/methodology of teaching staff – there is a lack of competencies not only in younger, but also in older teaching staff. Most of the professors never passed any course in pedagogy or methodology of teaching mathematics/natural science
- Majority of teaching staff, younger or older is not aware of need to improve their methodological competences.
- Teaching staff are usually aware of need to improve their IT and language competences.
- At the end of each semester students are obliged to evaluate methodology of teaching of all professors (and young teaching staff), whose lectures and tutorials they participated at.
- Nevertheless, students are not aware what exactly they should evaluate... they usually give higher marks to professors who gave higher marks to them...



## Letter from students to a teacher

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- Dear Professor X,

I would like to comment the organization of the tutorials for your course XXXXX. The lectures you held were really very good and we got valuable knowledge. Unfortunately, this can not be said for the tutorials. Colleague XXXX was not well prepared for exercises, which he also told us. At the exercises, he was making many mistakes which students noticed and warned him. His presentations were very confusing and very difficult to follow. Since I have been listening many different lectures so far, both in the country and abroad, I have to tell you that these were perhaps the worst classes I've ever been to. All of this has largely ruined the good impression you left on the theoretical part. XXXX

I think that you should take into account this fact. I am writing on behalf of all students from our class. Since we were recording part of the tutorials, you can see by yourselves the way in which the exercises were held.

Hoping to find a solution for this unpleasant situation, Sincerely Yours XXXXX

# Conclusion

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- Majority of younger as well as older teaching staff at Faculty of Science, University of Novi Sad never participated at any course in psychology, pedagogy and methodology in teaching (not even for methodology of teaching in secondary school)
- There are no courses (not even optional) in methodology of teaching at university level
- Younger teaching staff to some extent use simple IT technologies in communication with students but there is no any course (not even optional) in IT technologies in teaching
- Younger teaching staff usually have a good command of English language, but there are colleagues who do not speak English or any other foreign language (since English course at studies is optional).





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THANK YOU FOR YOUR ATTENTION!!!

