

Study program: Subject Teaching			
Type and level of studies: Graduate master studies			
Course unit: Teaching Methods Practicum in Material Technology			
Teacher in charge: Jelena M. Purenovic, Pavle M. Spasojevic			
Language of instruction: English			
ECTS: 6			
Prerequisites: Teaching methods			
Semester: Summer			
Course unit objective: Mastering the basic concepts within the methodological field of teaching materials technology (electrical and mechanical), acquainting students with the specifics of secondary education in materials science, successful integration into teaching, and enabling the use of various methods, organizational forms, and teaching resources. Encouraging a positive attitude towards innovation and preparing for the development and application of innovations in materials education.			
Learning outcomes of Course unit: Upon successful completion of the course, the student will be able to explain the place of materials technology in engineering and education. They will be familiar with the latest advancements in this scientific-teaching field, effectively setting and differentiating teaching objectives and outcomes. They'll be able to plan theoretical and practical lessons, independently develop exercises in real laboratory conditions, utilize specific software, and teach students how to use them. They will apply various techniques to monitor students' progress, identify research problems, and conduct applied research in the field of electrical and mechanical materials.			
Course unit contents: Theoretical classes The place of technical materials in the system of mechanical engineering, science, and education. The prevalence of technical materials in secondary education and the development of students' professional competencies. Objectives and outcomes of subjects in this field. Specifics of teaching implementation. Interconnection with other subjects. Lesson planning in the materials field. Scientific and applied research in materials technology and its integration into teaching. Innovations in materials education. Advancement of the scientific field of materials technology and upgrading teachers' knowledge in this domain. Specific software in the realm of technical materials. Evaluation of teaching in materials technology. Competencies of teachers in materials technology. Practical classes Implementation of laboratory exercises. Development of exercises applicable in secondary education for laboratory, experimental, and practical work. Evaluation and monitoring techniques of students' achievements in theoretical and practical teaching. Research in the field of materials technology. Organization of student research, experiments to encourage problem-solving learning and exploration. Preparation of a detailed teaching plan for one methodological unit from the materials technology subject program for vocational high schools. Implementation of teaching according to the prepared plan in simulated or real conditions, including analysis of all students.			
Literature: [1] Safa O. Kasap, Principles of Electronic Materials and Devices, 4th edition, McGraw-Hill Education, 2017 [2] Yang Leng, Materials Characterization: Introduction to Microscopic and Spectroscopic Methods, 2nd edition, Wiley-VCH, 2013 [3] Materials technology subject programs in secondary education and textbooks			
Number of active teaching hours: 4		Lectures: 2	Practice: 2
Teaching methods: Lectures: methods of working with text, verbal monologue methods, discussion methods, illustration and demonstration methods. Exercises: practical activity methods, laboratory exercises, written assignments, group seminar work and discussions, collaborative learning, exemplary classes; mentoring instruction.			
Evaluation (maximum number of points 100)			
Exam prerequisites:	No. of points:	Final exam:	No. of points:
Activities during teaching process	10	Final exam (written):	20
Practical teaching	10	Final exam (oral):	30
Colloquium	20		
Seminar work	10		