

Study program: Mechanical engineering				
Type and level of studies: Master studies				
Course unit: Construction & Mining Machines				
Teacher in charge: Prof. Dr Goran Marković				
Language of instruction: English				
ECTS: 6				
Prerequisites: None				
Semester: Summer				
Course unit objective: Training and development of specific creative skills for successful design of construction and mining machines. Mastering the procedures for the development and maintenance of construction and mining machines, according with theoretical and experimental approaches.				
Learning outcomes of the Course unit Qualifications of student to independently forming of calculation models of support structures and kinematic scheme of machine tools using the acquired theoretical and practical knowledge related to the calculation and definition of the critical load, specific operating conditions, capacity. Mastering the legal norms relating to the interaction of machine-environment as well as the safe and secure work of the operator.				
Course unit contents <i>Theoretical classes</i> Physical and mechanical properties of soils, earth moving machines with cyclical effects, calculation of capacity. Resistances in work. Drive mechanisms of construction and mining machines, basic parameters, criteria for decision making. Systematic view during the design elements of construction and mining machines, working conditions, displacement and soil stabilization, the work in mines and open-pit mines. Conceptual solutions, structural characteristics and calculation of excavators, loaders, dozers, graders, scrapers, articulated trucks, rollers, bucket wheel excavators and stackers. Theoretical fundamentals of grinding materials, calculation and construction of machinery for crushing and screening materials. <i>Practical classes</i> Introducing with working device of excavator, defining of characteristic calculation positions, demonstrations of excavator working device mechanisms. Simulation of loads of bucket tooth.				
Literature Nichols, H. L. ,Day D. A.: Moving The Earth: The Workbook of Excavation, Sixth Edition, McGraw-Hill Professional; 6 edition 2010, ISBN 978-0071502672 Huzij, R., Spano, A., Bennett, S.: MDT: Heavy Equipment Systems, Delmar Cengage Learning; 1 edition, 624 pages, 2008, ISBN: 1418009504 Fiat-Hitachi: Performance Handbook,1994				
Number of active teaching hours				Other classes
Lectures: 3	Practice: 2	Other forms of classes:	Independent work:	
Teaching methods Lectures, multimedia presentations, presentations of real constructions, calculation and preparation of project tasks. Simulation work in the laboratory.				
Examination methods (maximum 100 points)				
Exam prerequisites		No. of points:		Final exam
Student's activity during lectures		5		oral examination
practical classes/tests		5		written examination
Seminars/homework		30	
Project		30		
Other				
Grading system				
Grade		No. of points		Description
10		91-100		Excellent
9		81-90		Exceptionally good
8		71-80		Very good
7		61-70		Good
6		51-60		Passing
5		Less than 50		Failing