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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty**  | Faculty of Electronic Engineering |
| **GENERAL INFORMATION** |
| Study program  | **Electrical Engineering and Computing** |
| Study Module (if applicable) | Control Systems |
| Course title | Dynamics of Mechanisms and Machines |
| Level of study | [x] Bachelor [ ]  Master’s [ ]  Doctoral |
| Type of course | [x]  Obligatory [ ]  Elective |
| Semester  |  [x]  Autumn [ ] Spring |
| Year of study  | IV |
| Number of ECTS allocated | 5 |
| Name of lecturer/lecturers | Goran S. Đorđević, Boban Veselić |
| Teaching mode |  [x] Lectures [ ] Group tutorials [ ]  Individual tutorials [ ] Laboratory work [ ]  Project work [ ]  Seminar [ ] Distance learning [ ]  Blended learning [ ]  Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| *Introduction to problems in statics, kinematics and dynamics and with ways for their solving. Application in modeling of devices important for automatic control systems. Description of mechanics problem, with an emphasis on motion and interaction. Differential equations of motion and their solution. Dynamics of systems of rigid bodies. Modeling of the dynamics of transmission components in machines. Robot dynamics model.* |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| **Reduction of the system of forces: the main force vector and momentum. Equilibrium conditions. Kinematics of material point: position, finite equations of motion, velocity, acceleration, trajectory, hodograph of velocity and acceleration vectors. Kinematics of rigid body. Degrees of freedom. Angular velocity and acceleration. Dynamics of material point. Differential equations of motion. Work, energy, friction, motion in resistant environments, oscillations. System dynamics. General theorems on dynamics, conservative and nonconservative systems, potential and potential energy. Dynamics of rigid body. Theorems on momentum and kinetic momentum, coordinate systems, differential equations of rigid body motion. Analytical mechanic. Mechanical connections. Dynamics of constrained systems. Elements of mechanisms theory. Dynamics of mechanisms.** |
| **LANGUAGE OF INSTRUCTION** |
| [ ] Serbian (complete course) [ ]  English (complete course) [ ]  Other \_\_\_\_\_\_\_\_\_\_\_\_\_ (complete course)[x] Serbian with English mentoring [ ] Serbian with other mentoring \_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **ASSESSMENT METHODS AND CRITERIA** |
| **Pre exam duties** | **Points** | **Final exam** | **points** |
| **Activity during lectures** | **10** | **Written examination** | **20** |
| **Practical teaching** | **20** | **Oral examination** | **10** |
| **Teaching colloquia** | **40** | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |