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| **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty** | Faculty of Mechanical Engineering |
| **GENERAL INFORMATION** |
| Study Program | **Mechanical Engineering** |
| Study Module (if applicable) | - |
| Course Title | Mathematics 1 |
| Level of Study | ☒Bachelor | ☐ Master’s | ☐ Doctoral |
| Type of Course | ☒ Obligatory | ☐ Elective |
| Semester | ☒ Autumn | ☐ Spring |
| Year of Study | I |
| Number of ECTS Allocated | 7 |
| Name of Lecturer/Lecturers | Radović M.Ljiljana, Živković S. Dragan S.  |
| Teaching Mode | ☒ Lectures | ☒ Group tutorials | ☐ Individual tutorials |
| ☐ Laboratory work | ☐ Project work | ☐ Seminar |
| ☐ Distance learning | ☐ Blended learning | ☐ Other |
| **Purpose and Overview (max. 5 sentences)** |
| *The aim of the course is systematization and upgrade of high school knowledge relating to mathematical logic and sets, polynomials, vector algebra and differential and integral calculus of real functions of one variable; acquiring new knowledge of linear algebra, analytic geometry and calculus.**Students acquire knowledge of the basics of mathematical analysis, algebra and analytic geometry required for successfully understanding and mastering the technical professions subjects.*  |
| **Syllabus (brief outline and summary of topics, max. 10 sentences)** |
| *Outline: After completing this course, students should have developed a clear understanding of the fundamental concepts of linear algebra and single variable calculus as well as a range of skills allowing them to work effectively with the concepts.**Summary of topics: 1) Fundaments of mathematics logic, sets and algebraic structure. 2) Systems of linear algebraic equations and matrix algebra. 3) Analytic geometry, geometric vectors, vector space (three-dimensional Euclidean space), equations of lines and planes in space. 5) Real function of one variable (limit, continuity, derivative, differential, differentiability; higher derivatives). 6) Fundamental Theorems of Differential calculus. 7) Application to local and global extreme values and graphing. 8) Definite and indefinite integration, techniques of integration; 9) The fundamental theorem of calculus. 10) Applications to Geometry: area, volume and arc length. Improper integrals.* |
| **Language of Instruction** |
| ☒Serbian (complete course) | ☐ English (complete course) | ☐ Other \_\_\_\_\_\_\_\_\_\_\_\_\_ (complete course) |
| ☐Serbian with English mentoring | ☐Serbian with other mentoring \_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Assessment Methods and Criteria** |
| **Pre exam Duties** | **Points** | **Final Exam** | **Points** |
| **Activity During Lectures** | **5** | **Written Examination** | **Max. 60 (depending on Teaching Colloquia)** |
| **Practical Teaching (Homework)** | **5** | **Oral Examination** | **30**  |
| **Teaching Colloquia** | **60** | **Overall Sum** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |