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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 2  |
| 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 | MelanijaMitrović, Ljiljana Radović |
| 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 to introduce students to the basics of the multivariable calculus. Students acquire knowledge of the Mathematics 1. Although multivariable calculus can be seen as the extension of*[*calculus*](https://en.wikipedia.org/wiki/Calculus)*in one*[*variable*](https://en.wikipedia.org/wiki/Variable_%28mathematics%29)*to calculus in more than one variable, many counter-intuitive results not demonstrated by single-variable functions appear. For example: study of f*[*limits*](https://en.wikipedia.org/wiki/Limit_of_a_function)*and*[*continuity*](https://en.wikipedia.org/wiki/Continuous_function)*,   partial derivatives of a multivariable function, double and triple integrals, line integrals, etc. Taking into account facts that, multivariable functions of real variables arise unavoidably in*[*engineering*](https://en.wikipedia.org/wiki/Engineering)*and*[*physics*](https://en.wikipedia.org/wiki/Physics)*, the course is targeting both the theoretical and practical aspects of the topics.*  |
| **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 multivariable calculus and first-order and higher-order differential equations, as well as a range of skills allowing them to work effectively with the concepts.**Summary of topics: 1) Functions of several variables; 2) Multiple integrals; 3) Vector-valued functions; 4) Vector fields; 5) Line integrals; 6) First-order differential equations; 7) Higher-order differential equations.*  |
| **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** | **10** | **Written Examination** | **Max. 60 (depending on Teaching Colloquia)** |
| **Practical Teaching** |  | **Oral Examination** | **Max. 30 (depending on Teaching Colloquia)** |
| **Teaching Colloquia** | **90** | **Overall Sum** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |