|  |
| --- |
| **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty** | Faculty of Mechanical Engineering |
| **GENERAL INFORMATION** |
| Study Program | **Mechanical Engineering** |
| Study Module (if applicable) | - |
| Course Title | Fluid mechanics |
| Level of Study | ☒Bachelor | ☐ Master’s | ☐ Doctoral |
| Type of Course | ☒ Obligatory | ☐ Elective |
| Semester | ☐ Autumn | ☒ Spring |
| Year of Study | II |
| Number of ECTS Allocated | 6 |
| Name of Lecturer/Lecturers | Dragiša D. Nikodijević |
| 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 all students to physical properties of the fluid, basic equations that describe the fluid statics and dynamics and real problems related to the fluid flow. The course is targeting both the theoretical and practical aspects of the fluid mechanics.* |
| **Syllabus (brief outline and summary of topics, max. 10 sentences)** |
| 1) Physical properties of fluids. 2) The forces acting on the fluid. 3) Fluid statics. Pressure and its properties, hydrostatic equation. Relative equilibrium of fluids. 4) The pressure of fluid on flat and curved surfaces. Buoyancy and stability. 5) General equations of fluid dynamics: Euler equations, the equation of continuity. Bernoulli's equation. 6) Laminar fluid flow, Navier-Stokes equations, turbulent flow - Reynolds equations. 7) Hydrodynamic similarity, the Pi-theorem. 8) Basic theory of hydraulic resistance. Calculation of the friction and local losses. 9) Laminar and turbulent flow of fluid through the pipe. 10) The basis of the hydrodynamic lubrication theory. 11) Calculation of simple and complex pipeline. 12) Orifice and nozzle discharge. Flow trough small and large orifices, underwater discharge. Discharge with variable fluid level. |
| **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** |
| **Lecture (participation)**  | **5**  | **Written Examination** | **0\* (60)** |
| **Laboratory** | **5** | **Oral Examination** | **Max. 30**  |
| **Three midterm exams** | **60** | **Overall Sum** | **100** |
| **\*** **Refers to students who have already gained points by completing pre-exam requirements** |