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|  **UNIVERSITY OF NIŠ** |
| **Course Unit Descriptor** | **Faculty**  | **Electronic Engineering** |
| **GENERAL INFORMATION** |
| Study program  | Computing and Informatics  |
| Study Module (if applicable) | Software engineering |
| Course title | Interoperability and information integration |
| Level of study | [ ] Bachelor [x]  Master’s [ ]  Doctoral |
| Type of course | [ ]  Obligatory [x]  Elective |
| Semester  |  [x]  Autumn [ ] Spring |
| Year of study  | 1 |
| Number of ECTS allocated | 4 |
| Name of lecturer/lecturers | Leonid Stoimenov |
| Teaching mode |  [x] Lectures [ ] Group tutorials [ ]  Individual tutorials [ ] Laboratory work [x]  Project work [ ]  Seminar [ ] Distance learning [ ]  Blended learning [ ]  Other |
| **PURPOSE AND OVERVIEW (max. 5 sentences)** |
| *Introducing the need for information integration, as well as the need for implementing interoperability of applications and systems. Presenting the issues of information integration and technologies for implementation of integration and systems interoperability.**Theoretical and practical knowledge on concepts, ways of solving, designing and implementing basic elements of system interoperability and information integration.*  |
| **SYLLABUS (brief outline and summary of topics, max. 10 sentences)** |
| Information integration introduction. Heterogeneity issues and solving techniques: technical, semantic and syntax. Information integration architectures: data warehouses, federative databases, mediator based systems. Ontologies and semantic heterogeneity. Solving semantic heterogeneity based issues; ontology types for information integration; mapping between ontologies. Applications and systems interoperability and its significance in enterprises. Approaches and platforms for interoperability implementation. Platforms and frameworks examples: Buster, GeoNis etc. Technologies for interoperability: Enterprise Service Bus, service oriented technologies. Standards and their importance for interoperability. The role of Web portal in interoperable systems. Trust in safety and security in interoperable systems. Practical implementation of simple information integration examples that show the existence of heterogeneity issues and approaches to solving them on technical and syntax level. Implementation of architectures for information integration: federative databases, data warehouses, mediator based systems. The role of translators in the architecture and their implementation. Ontologies, RDF and OWL. Implementation of mapping between ontologies. Implementation of system interoperability based on ESB and service oriented architecture. Implementation of Web portal as central access point to integrated information.  |
| **LANGUAGE OF INSTRUCTION** |
| [x] 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** |  | **Written examination** |  |
| **Practical teaching** | 30 | **Oral examination** | 40 |
| **Teaching colloquia** | 30 | **OVERALL SUM** | **100** |
| **\*Final examination mark is formed in accordance with the Institutional documents** |