VELEUČILIŠTE U KARLOVCU
Karlovac University of Applied Sciences

# SYLLABUS PREDMETA

**General information**

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|---|---|
| Course title: | **INFORMATION SYSTEMS** |
| ISVU[1] course code: | 38199 / IZ02 |
| Studies in which the course is taught: | Master Study of Business Administration, part time study |
| Course Instructor: | Ph.D Adam Stančić |
| Course Assistant: | - - - |
| ECTS credits: | 4,0 |
| Semester of the course execution: | II. (summer sem.) |
| Academic year: | 2025/2026 |
| Exam prerequisites: | - - - |
| Lectures are given in a foreign language: | English |
| Aims: | Acquisition of theoretical knowledge in the field of information systems (IS) necessary for modern business management based on computerized business processes. Students will be introduced to different methods of collecting, processing and analyzing data needed to carry out the phases of planning, development, implementation and maintenance of an information system. |

**Course**

| Course structure | Number of contact hours per week: | Number of contact hours per semester: | Student's requirements by type of teaching: |
|---|---|---|---|
| Lectures: | 2 | 30 | attendance 80% |
| Tutorials: | 2 | 30 | attendance 80% |
| Practical (lab) sessions: | | | |
| Seminars: | | | |
| Field work: | | | |
| Other: | | | |
| TOTAL: | 4 | 60 | |

**Monitoring of students' work, knowledge evaluation and learning outcomes**

| | **LEARNING OUTCOMES** (upon completion of the course the student should be able to:) | **FACTORS AFFECTING THE GRADE** (e.g. term paper, practical work, presentation, ...) | **MAXIMUM NUMBER OF POINTS PER FACTOR** |
|---|---|---|---|
| Formation of the grade during the implementation of teaching:<br><br>(Define from minimum 5 to maximum 10 learning outcomes) | **I 1:** Describe the concept and essential features of information systems | Colloquium I | Presence<br>10 points<br><br>Colloquium I<br>40 points<br><br>Colloquium II<br>40 points<br><br>Seminar<br>10 points |
| | **I 2:** Explain the role and relationship of information and business system | Colloquium I | |
| | **I 3:** Illustrate information systems organization systems | Colloquium I | |
| | **I 4:** Categorize the stages of planning, development and implementation of information systems | Colloquium II | |
| | **I 5:** Formulate process and data models based on user requirements | Colloquium II | |
| | **I 6:** Compare the characteristics of conceptual and logical data models | Colloquium II | |

[1] ISVU – Information System of Higher Education Institutions in Croatia

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| Alternative formation of the grade<br>( I 1 – I 10) | **or alternative formation of the grade: I 1 – I 10** | TOTAL: 100 points |
| Students' competencies | The student will be acquainted with the parts and organization, the levels of decision-making at which it operates, the life cycle, the method of development, documentation and implementation, and the relationship between the information system and management. Furthermore, the student will be able to distinguish between process models, resources and data used in the information system development process. | |

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| Prerequisites for course approval (lecturer's signature): | Attendance at lectures and exercises at least 80% |
| Prerequisites for taking exams: | Passed exercises + submitted seminar paper |
| Grading scale: | (According to the Regulations on student assessment of Karlovac University of Applied Sciences, Article 9, Paragraph 5)<br>90-100 - excellent (5) (A)<br>80 to 89.9 - very good (4) (B)<br>65 to 79.9 - good (3) (C)<br>60 to 64.9 - sufficient (2) (D)<br>50 to 59.9 - sufficient (2) (E)<br>0 to 49.9 – fail (1) (F)<br><br>Students are graded during class, what forms 70% of final exam. Students who achieve 50% (35 points) and more are allowed to take the final exam. The score on final exam makes 30% of the final grade. |

**ECTS structure**

ECTS credits allocated to the course reflect the total burden to the student during adoption of the course content. Total contact hours, relative gravity of the content, effort required for exam preparation, as well as, every other possible burden are taken in account:

| **Attendance (active participation)** | **Term paper** | **Composition** | **Presentation** | **Continuous assessment and evaluation** | **Practical work** |
|---|---|---|---|---|---|
| **0,5** | **0,5** | | | | **1,0** |
| **Independent work** | **Project** | **Written exam** | **Oral exam** | **Other** | |
| | | **2,0** | | | |

**Review of topics/units per week associated with learning outcomes**

| Week | Lectures topics/units and learning outcomes: | Tutorials topics/units and learning outcomes: |
|---|---|---|
| 1. | Introductory lecture, lecture topics, learning outcomes, student obligations | Student responsibilities, review of applications used in the exercises, instructions for solving tasks |
| 2. | Data, information, concept of informatics information system (IS), business system (PS) **I 1**, **I 2** | Data collection from files, data collection from online sources in the business system **I 1**, **I 2** |
| 3. | Historical development of technical basis, software and network infrastructure of IS **I 2** | Analysis and processing of collected data, elimination of errors, NULL values and duplicates, simple and complex data sorting **I 2** |
| 4. | Components of IS, IS as a strategic interest, the role of IS in management, the relationship between IS and management **I 1**, **I 2** | Data filtering, processing of numerical, textual, time (date and time), logical and statistical values **I 2** |

| | | |
|---|---|---|
| 5. | Types of IS by level of management, business information system (PIS), data structure within IS **I 2** | Presentation of operational data, preparation of reports, grouping and aggregation of data (pivot tables), data consolidation **I 3** |
| 6. | Types of IS organization within PS, performance of centralized, decentralized and distributed organization **I 2**, **I 3** | Access to data and their search on local and remote computer, linking physically separated data into a logical unit **I 3** |
| 7. | Client-server architecture, MS Windows domain, virtualization, types of virtualization **I 3** | Example of defining access rights in MS Windows domain, creating and working with a virtual computer, installing software **I 3** |
| 8. | Cloud computing, cloud IS, types of services, quality of services, SLA contracts and quality of service **I 3** | Working with a virtual machine, migrating a virtual machine, accessing cloud services IaaS, PaaS and SaaS **I 3** |
| 9. | Transformation of business processes, relationship between IS and PS, effects of IS application **I 4** | "What if" data analysis, scenario formation, solution search, data tables **I 4** |
| 10. | Expected IS functionalities, causes of failed implementation, IS life cycle, Nolan model (basic and extended), **I 4** | Numerical methods - optimization, logistics and transport problem **I 4** |
| 11. | Strategic IS planning, classical and "agile" IS life cycle models **I 4** | Types of databases (planar, hierarchical, relational, non-relational), examples in practice **I 4** |
| 12. | Collection, processing, analysis and documentation of user requirements, approach to IS modelling **I 5** | Creating process data flow diagrams, creating entity-connection diagrams **I 4**, **I 5** |
| 13. | Process model, data flow diagram, process decomposition, resource model, conceptual (EV) data model **I 4**, **I 5** | Creating entity diagrams, entities (independent, weak), attributes (key, complex, ambiguous, derived), cardinality of relationships (1: 1, 1: N, N: M) **I 5** |
| 14. | Logical data models (hierarchical, network, object), relational data model **I 6** | Relational scheme, relation, key, attribute, data dictionary **I 6** |
| 15. | Relation of algebra, redundancy and normalization of data, relation of object and relational model (ORM) **I 6** | Relational algebra, an example of redundancy, functional dependence and the implementation of normalization to the third normal form (3NF) **I 6** |

**References**

REFERENCES (compulsory/additional):

Compulsory:

- Skripta i prezentacije za praćenje predavanja (autor: Adam Stančić)
- Panian, Ž. et. al.: Poslovni informacijski sustavi, Element d.o.o., Zagreb, 2010

Additional:

- Luić, Lj.: INFORMACIJSKI SUSTAVI: poslovni, logistički i zdravstveni informacijski sustavi, Veleučilište u Karlovcu, 2009.
- Klasić, K., Klarin, K.: INFORMACIJSKI SUSTAVI - skripta, Veleučilište u Splitu, odjel računarstva, Split, 2003.

**Exams for the academic year:** 2025/2026

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| Exam dates: | According to the schedule of exams for academic year published on the web-site |

**Contact information**

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# *SYLLABUS PREDMETA*

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| 1. Course Instructor/Lecturer: | Ph.D Adam Stančić |
| e-mail: | adam.stancic@vuka.hr |
| Office hours / Consultations: | Tue, 10:00, Meštrovićeva 10, 1st floor, room no. 109 |
| 2. Course Instructor/Lecturer: | - - - |
| e-mail: | - - - |
| Office hours / Consultations: | - - - |