Study program: Information Technologies and Systems	
Course title: Advanced Methods of Information System Development	
Professor/assistant: PhD Miroljub Banković, PhD Miljković Olga	
Type of course: Compulsory	
ECTS credits: 7	
Prerequisites: Completed course *Information System Development* (undergraduate studies)	

Aims of the course:

Training students to define and model requirements of designed information system in a way it can be understood by both end-users and its implementers who will be able to translate system requirements into appropriate application software using current OO programming languages (Java, C#).

Learning outcomes: independent use of UML for modeling information systems.

Syllabus:

1. **System analysis using OO access** – Application of Use Case modeling for documenting; Application of the collaboration diagram and sequence diagram for request analysis; Class diagrams as a technique for a more detailed display of the system model requirements
2. **System design using OO access** – Logical and physical design; System design; Detailed design (designing objects; criteria of good design - cohesion and pairing)
3. **Using samples (Patterns) in design** – Definition and classification of samples; Samples
4. **Designing a database** – management systems for relational and object-oriented databases; Distributed systems
5. **Designing the interaction of a human – computer** – User interfaces; Border classes, Architecture of the presentation layer; Modeling the interface by using the state diagram
6. **Implementation** – Component diagrams; Distribution diagrams; Program code generators; Software testing; Conversion and migration of data; Production of documentation; Training of users
7. **Reengineering software** – Significance and methodology of reengineering; Needs, possibilities and methods of moving from the classic (procedurally oriented) to the OO design of the information system.

Literature:

1. Weissfeld M., Objektno orjentisani način razmišljanja, SET, Beograd, 2003.
2. Lawrence Pfleeger S., Atlee J. M., Softversko inženjerstvo teorija i praksa, SET, Beograd, 2006.
3. Shalloway A., Trott J. R., Projektni obrasci (nove tehnike OO projektovanja) Mikro knjiga, Beograd, 2002.
4. Milićev D., Zarić M., Piroćanac N., Objektno orjentisano modelovanje na jeziku UML, Mikro knjiga, Beograd, 2001.
5. Veljović A., Osnove objektnog modeliranja UML, Kompjuter biblioteka, Čačak ,2004
6. Veljović A., Relacione i analitičke baze podataka, Megatrend Univerzitet, 2004.
7. Sumathi S., Sivanandam S.N., Introduction to Data mining and its Applications, Springer, 2006.
8. Thomsen E., Spofford G., OLAP Solutions: Building Multidimensional Information Systems, John Wiley & Sons, 1997.

Total number of active classes: 6	Lectures: 3	Practical classes: 3

Teaching methods:

Theoretical part: interactive lectures

Practical part: preparation of professional and term papers. Experimental work and professional practice. Consultations.

Grading system (maximum 100 points)

grading scale from 5 to 10: below 51 points grade 5, grade 6 from 51- 60 points, grade 7 from 61-70 points, grade 8 from 71-80 points, grade 9 from 81-90 points, grade 10 from 91- 100 points.

Pre-exam obligations:	Points:	Final exam:	Points:
Activity during lectures	5	Oral exam	60
Practical training	5		
Term papers	30		