

(faculty stamp)

COURSE DESCRIPTION

Z1-PU7

WYDANIE N1

Strona 1 z 3

1. Course title: DATABASE SYSTEMS AND APPLICATIONS			2. Course code	
3. Validity of course description: 2018/2019				
4. Level of studies: BSc programme				
5. Mode of studies: intramural studies				
6. Field of study: COMPUTER SCIENCE			(FACULTY SYMBOL)	
7. Profile of studies: COMPUTER SCIENCE				
8. Programme:				
9. Semester: 5,6				
10. Faculty teaching the course: Institute of Informatics, RAu2				
11. Course instructor: Dariusz Rafał Augustyn, PhD				
12. Course classification:				
13. Course status: compulsory				
14. Language of instruction: English				
15. Pre-requisite qualifications: Fundamentals of database systems				
16. Course objectives: The purpose of the subject is to teach students how to design, build, and test the applications that accessing databases.				
17. Description of learning outcomes:				
Nr	Learning outcomes description	Method of assessment	Teaching methods	Learning outcomes reference code
W1	Student understands the role of crucial processes in database server	exam	lecture	K1A_W09
W2	Student knows and understands phases of SQL query processing	exam, report	lecture, project	K1A_W09
W3	Student knows bases of cost query optimization methods	exam	lecture	K1A_W15
W4	Student knows data access methods in a light of physical database architecture	exam	lecture	K1A_W17
W5	Student knows base functionalities of modern CASE that support designing and developing of a database application	project	lecture, project	K1A_W13
W6	Student knows application programming interfaces (API) for accessing databases from applications available in common modern runtime environments	exam, project	lecture, project	K1A_W15, K1A_W22
W7	Student understands and can apply the concept of Object-Relation mapping	exams	lecture	K1A_W17
U1	Student can use selected CASE tools in design and development process	project, report	project	K1A_U01, K1A_U21
U2	Student can create and maintain databases handled by concrete DBMS.	project	project	K1A_U25
U3	Student can describe the system being developed using formal modern artifacts of analysis and design	project, report	project	K1A_U02, K1A_U20
U4	Student can propose the architecture of system being developed taking into consideration its components	project	project	K1A_U27
U5	Student can efficiently apply to its application the	project	project	K1A_U26,

	concrete application programming interface for database access			K1A_U29
K1	Student can work and cooperate in a project team	Project	Project	K1A_K02
K2	Student can decompose problems into tasks and she/he can prioritize them	Project	Project	K1A_K01
K3	Student can develop selected elements of information system, individually and independently	Project	Project	K1A_K04
18. Teaching modes and hours Lecture / BA /MA Seminar / Class / Project / Laboratory Lecture 30 h., Project 30h.				
19. Syllabus description: Lectures: Selected aspects of architecture and operating of modern Database Management System (DBMS) like physical structure of database, mechanism of transactions in details, query optimization, security of DBMS and database applications. Programmatic access to databases – architecture and technologies used for creating the client of database services Simple database access interfaces: Usage of JDBC interface, Usage of ADO.NET. Object-Relational mapping in practice: Usage of Hibernate, JPA, Spring Data, Usage of Linq to SQL, Entity Framework. Architecture and technologies of building and deploying modern applications with access to database - Hints and recommendations Project: Acquiring and maintain user and system requirements Analyzing business domain – develop analysis artifacts like selected types of UML diagrams Proposing adequate architecture and technologies Making system project – preparing project artifacts like selected types of UML diagrams Preparing development environment (local/remote) enabling efficient working in a group Developing the application Testing given modules and entire solution (manual and automatic) Preparing deployment version of the system Preparing for and passing acceptance test				
20. Examination: after 5 th semester – written exam				

21. Primary sources:

G. Booch, J. Raumbaugh, I. Jacobson: Unified Modeling Language User Guide
 M.Fowler: Analysis Patterns, Reusable Object Models

22. Secondary sources:

Internet sources presented during the lectures and project
 Henry F. Korth H.F., Sudarshan S., Silberschatz A.: Database System Concepts
 Bauer C., King G.:Hibernate in Action: Practical Object/Relational Mapping
 Fowler M., Lewis J.: Microservices

23. Total workload required to achieve learning outcomes

Lp.	Teaching mode :	Contact hours / Student workload hours
1	Lecture	30/30
2	Classes	/
3	Laboratory	/
4	Project	30/30
5	BA/ MA Seminar	/
6	Other	/
	Total number of hours	60/60

24. Total hours:120**25. Number of ECTS credits: 4****26. Number of ECTS credits allocated for contact hours: 2****27. Number of ECTS credits allocated for in-practice hours (laboratory classes, projects): 2****26. Comments:**

Approved:

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 (date, Instructor's signature)

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 (date , the Director of the Faculty Unit signature)