SYLLABUS

Name: ***Database Systems and Applications (InfAAu>SI6DSaA19)***
Name in Polish:
Name in English: ***Database Systems and Applications***

Information on course:

Course offered by department: Faculty of Automatic Control, Electronics and Computer Science
Course for department: Silesian University of Technology

Default type of course examination report:

ZAL

Language:

English

Course homepage:

https://platforma2.polsl.pl/rau2/course/view.php?id=1029

Short description:

The course aims to prepare and implement a project from scratch, resulting in a working database application. The course prepares students for the effective, collaborative development of a simple IT system. The development process encompasses all phases, such as analysis, design, production, testing, and implementation, regardless of the methodology adopted. In particular, it aims to provide practical familiarization with the latest trends in software tools, runtime environments, architectural templates, technologies, and technology stacks.

Description:

ECTS: 2
Total workload: 60 (30 contact hours / 30 student's own work)
Projects (sem.5) 30h

Student's own work: preparation for classes

Project goals:

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

Two main ecosystems (Java and .NET) are used in creating business logic layer. Students may use different software architectures and technology stacks but commonly the following components are used:

- WinForm , .NET, Linq2SQL/Entitfy Framework, SQLServer,
- Angular/React , ASP .NET Web API .Net Core, SQLServer,
- Angular/React, Java, spring-boot, spring data, JPA , Hibernate, PostgreSQL,
- JavaFX, Hibernate PostgreSQL.

Bibliography:

1. Booch G. , Raumbaugh J., Jacobson I.: Unified Modeling Language User Guide, Addison-Wesley Professional; 2nd edition, 2005
2. Fowler M.: Analysis Patterns, Reusable Object Models, Addison-Wesley Professional, 1996
3. Henry F. Korth H.F., Sudarshan S., Silberschatz A.: Database System Concepts, McGraw-Hill Education - Europe, 2010
4. Bauer C., King G.:Hibernate in Action: Practical Object/Relational Mapping, Manning Publications, 2004
5. Fowler M., Lewis J.: Microservices,
https://www.researchgate.net/publication/330117514_Microservices_the_Future_of_Distributed_System
2019

Learning outcomes:

Can formulate the functional characteristics of an application (K1A_U20) and design and implement an IT system. Can build an IT system with distributed components in computer networks (K1A_U25). Solves practical problems by implementing a system that supports a specific part of a business domain (K1A_K01). Learns modern solutions in IT system development and new technology stacks (K1A_W13). Skillfully selects data structures for developed IT systems (K1A_W17). Acquire methods for practical implementation of the developed system in the context of potential commercialization (K1A_W21).

Assessment methods and assessment criteria:

Method of knowledge verification:

sem. 6 - Project artifacts
In the 2nd semester of the subject students should create the final software project. The final mark results from assessment by the teacher.

The syllabus is valid from the 5th semester / academic year 2025/2026-Z, and its content is not subject to change during the semester.

Course credits in various terms:

Informatics, full-time first degree engineering studies 7 sem. (InfAAu-SI7)

Type of credits	Number	First term	Last term
European Credit Transfer System (ECTS)	2	2020/2021-L	