POZNAN UNIVERSITY OF TECHNOLOGY

COURSE DESCRIPTION CARD - SYLLABUS

Course name
Engineering-oriented databases [N1ZiIP2>IBD]

Course

Field of study	Year/Semester
Management and Production Engineering	4/7
Area of study (specialization)	Profile of study
–	general academic
Level of study	Course offered in
first-cycle	Polish
Form of study	Requirements
part-time	elective

Number of hours

Lecture	Laboratory classes	Other
8	8	0
Tutorials	Projects/seminars	
0	0	

Number of credit points

2,00

Coordinators	Lecturers

Prerequisites

Has knowledge of computer construction and operation. Can operate a computer, knows how to use basic MS Office tools to support engineering activities. Is aware of responsibility for own work, understands the need to learn and acquire new knowledge.

Course objective

Understanding the theoretical and practical problems associated with the design and application of engineering databases in the enterprise.

Course-related learning outcomes

Knowledge:
Defines, distinguishes and classifies basic concepts from the area of database design.
Distinguishes, names, characterizes and describes database systems and issues related to them.
Proposes the use of database systems for various areas of the enterprise.

Skills:
Can design a relational database for various areas of the enterprise.
Can implement an engineering database.
Can operate a database (enter, edit, delete data).

Social competences:
Can cooperate and work in a group, assuming different roles in it. Can set priorities for the implementation of a task specified by himself or others.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: assessment based on a colloquium consisting of open and closed test questions (assessment if at least 51% of questions are answered correctly) conducted at the end of the semester.

Assignment of grades to percentage ranges of results: <90-100> very good; <80-90) good plus; <70-80) good; <60-70) satisfactory plus; <50-60) satisfactory; <0-50) unsatisfactory.

Laboratory: assessment based on exercises performed according to the instructions and practical testing of the student's skills - computer test. To obtain a credit for the laboratories, all exercises must be passed and the student must receive a positive grade for the task performed independently on the computer.

Programme content

Classification of databases.
Relational databases - characteristics, design methods.
Database design tools.

Course topics

Lecture:
Basic knowledge and principles of database design (concepts, definitions, features, classification).
Data models: hierarchical, network, relational, object. Design methodology. Tools for building database systems. Application of databases in an enterprise (role of databases, requirements, data organization, application examples). Database management systems (organization of external memory, index files, queries and their optimization, data integrity and methods of ensuring it, transactions, locking, database reliability, data protection against unauthorized access). Introduction to SQL. Distributed databases.
Lab:
Conversion of object-relationship models to a relational model using
IT tools. Entering data into a sample database. Implementation of the relational
model in MS Access (creating relationships, relationships and assigning integrity
constraints). Query construction. Creating sample forms and queries. Creating a database user interface.

Teaching methods

Lecture: multimedia presentation illustrated with examples given on the board, solving tasks.
Laboratories: solving tasks on the computer. Practical exercises, discussion.

Bibliography

Basic:
P. Beynon-Davies, Systemy baz danych, WNT, Warszawa, 1998
Hamrol A. (red.) Elementy informatyki dla inżynierów mechaników, Wydawnictwo Politechniki Poznańskiej, Poznań, 2001
Rojek-Mikołajczak I, Bazy danych, Wydawnictwo Akademii Bydgoskiej, Bydgoszcz, 2004
Mark Whitehorn, Bill Marklyn, Relacyjne bazy danych, Helion, Warszawa 200

Complementary:
Fundamentals of database systems, R. Elmasri, S. B. Navathe, The Benjamin/Cummings Publishing Company, Redwood City CA 94065, 1994

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	16	0,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	34	1,50