GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

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|---|---|---|---|---|---|---|---|
| Subject name and code | Management of Database Systems, PG_00047963 | | | | | | |
| Field of study | Informatics | | | | | | |
| Date of commencement of studies | October 2025 | | Academic year of realisation of subject | 2028/2029 | | | |
| Education level | first-cycle studies | | Subject group | Optional subject group<br>Subject group related to scientific research in the field of study | | | |
| Mode of study | Full-time studies | | Mode of delivery | at the university | | | |
| Year of study | 4 | | Language of instruction | Polish | | | |
| Semester of study | 7 | | ECTS credits | 3.0 | | | |
| Learning profile | general academic profile | | Assessment form | assessment | | | |
| Conducting unit | Department Of Software Engineering -> Faculty Of Electronics Telecommunications And Informatics -> Wydziały Politechniki Gdańskiej | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | dr inż. Grzegorz Gołaszewski | | | | | |
| | Teachers | dr inż. Grzegorz Gołaszewski | | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 15.0 | 0.0 | 30.0 | 0.0 | 0.0 | 45 |
| | E-learning hours included: 0.0 | | | | | | |
| Learning activity and number of study hours | Learning activity | Participation in didactic classes included in study plan | | Participation in consultation hours | Self-study | | SUM |
| | Number of study hours | 45 | | 3.0 | 27.0 | | 75 |
| Subject objectives | Subject aims at practical knowledge and skills of database systems administration, including security, efficiency and integrity management. | | | | | | |

## Learning outcomes

| Course outcome | Subject outcome | Method of verification |
|---|---|---|
| [K6_U09] can carry out a critical analysis of the functioning of existing technical solutions and assess these solutions, as well as apply experience related to the maintenance of technical systems, devices and facilities typical for the field of studies, gained in the professional engineering environment | The student is able to assess the state and performance of the database and instance. | [SU1] Assessment of task fulfilment |
| [K6_U07] can apply methods of process and function support, specific to the field of study | The student is able to perform tasks in the field of administering database systems, including:<br>- demonstrates the ability to install the Oracle database system,<br>- demonstrates database and instance management skills,<br>- demonstrates the ability to manage users,<br>- demonstrates the ability to track and optimize database performance<br>- demonstrates the ability to restore a database after a failure. | [SU1] Assessment of task fulfilment |
| [K6_W44] knows and understands, to an advanced extent, architecture, design principles and methods of hardware and software support for local and distributed information systems, including computing systems, databases, computer networks and information applications, as well as the principles of human-computer interaction, the operation and evaluation criteria of data processing, storage and transfer methods, including computational algorithms, artificial intelligence and data mining as well as standards and methods of IT systems administration, monitoring of processes and robustness to undesirable phenomena and activities | The student knows the issues of administering database systems, including:<br>- rules of user and permissions administration,<br>- rules for database and instance management,<br>- rules for tracking and optimizing database performance,<br>- rules for creating data copies and data recovery. | [SW1] Assessment of factual knowledge |

## Subject contents

1. Introduction to database systems management. DBA tasks.
2. Database system architecture, an example of Oracle DBMS
3. Management of logical and physical database structures.
4. Database system security: privileges, roles and users
5. Database system security: creating archives and restoring
6. Database system performance: tracking
7. Database system performance: database tuning, capacity planning
8. Database system performance: query optimization mechanisms
9. Database system performance: clusters
10. Failure models of database systems and restore processes. Bug tracking and problem solving.
11. Automation of DBA tasks

## Prerequisites and co-requisites

## Assessment methods and criteria

| Subject passing criteria | Passing threshold | Percentage of the final grade |
|---|---|---|
| Practical exercise | 50.0% | 50.0% |
| Midterm colloquium | 50.0% | 50.0% |

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|---|---|---|
| Recommended reading | Basic literature | Lecture:<br><br>1. Christian Antognini, "Troubleshooting Oracle Performance", Apress 2008<br>2. Elke Phelps, Paul Jackson, "Oracle Applications DBA Field Guide", Apress 2006<br>3. Ron Ben Natan, "HOWTO Secure and Audit Oracle 10g and 11g", Taylor & Francis Group 2009<br>4. Sam R. Alapati, "Expert Oracle Database 11g Administration", Apress 2009<br><br>Laboratory:<br><br>1. Oracle Database 2 Day DBA, 19c.<br>2. Oracle Database Database Administrators Guide, 19c<br>3. Oracle Database Database Installation Guide, 19c for Linux<br>4. Oracle Database Database Client Installation Guide, 19c for Linux<br>5. Oracle Database Database 2 Day + Performance Tuning Guide, 19c<br>6. Oracle Database Database Performance Tuning Guide, 19c<br>7. Oracle Database SQL Language Reference, 19c |
| | Supplementary literature | No requirements |
| | eResources addresses | Adresy na platformie eNauczanie: |
| Example issues/ example questions/ tasks being completed | 1. Design a security policy in accordance with the given requirements and implement it.<br>2. Describe the storage structures used in the Oracle system and explain their mutual relations.<br>3. Why is an inconsistent copy of data is called an online copy? How can you restore consistent data from an inconsistent backup? | |
| Work placement | Not applicable | |

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