

COURSE SYLLABUS AND COURSE REQUIREMENTS

ACADEMIC YEAR 2023/2024 SEMESTER 1.

<i>Course title</i>	Databases 2.
<i>Course Code</i>	IVB004ANMI
<i>Hours/Week: le/pr/lab</i>	0/0/8
<i>Credits</i>	4
<i>Degree Programme</i>	IT Engineering / BSc
<i>Study Mode</i>	Full time
<i>Requirements</i>	Exam
<i>Teaching Period</i>	2023/24/1
<i>Prerequisites</i>	Databases 1., Programming 1.
<i>Department(s)</i>	System- and Software Technologies
<i>Course Director</i>	Tamás Pintér
<i>Teaching Staff</i>	Anett Lénárt

COURSE DESCRIPTION

A short description of the course (max. 10 sentences).

Neptun: Instruction/Subjects/Subject Details/Basic data/Subject description

Getting to know the areas of use, locations and possibilities of the Oracle database used in large company environments based on the experience gained in the market environment.

SYLLABUS

Neptun: Instruction/Subjects/Subject Details/Syllabus

1. GOALS AND OBJECTIVES

Goals, student learning outcome.

Neptun: Instruction/Subjects/Subject Details/Syllabus/Goal of Instruction

The aim of the subject is to use an Oracle database in real situations based on the semester course material. The student demonstrates his understanding of the system and his acquired knowledge through a professional project.

2. COURSE CONTENT

Neptun: Instruction/Subjects/Subject Details/Syllabus/Subject content

TOPICS

LECTURE AND PRACTICE

1. *The SQL language and relational databases, database managers*
2. *SQL syntax basics*
3. *Data modification instructions, authorization management*
4. *Oracle objects, object types*
5. *PL/SQL programs*
6. *PL/SQL program structures*
7. *Oracle, PL\SQL types*
8. *Transaction Management*
9. *Triggers, Sequences*
10. *Exception handling, JOBs*
11. *Views, special views and tables, temporary tables*
12. *Dynamic SQL*
13. *Non-relational databases, data structures*

DETAILED SYLLABUS AND COURSE SCHEDULE

ACADEMIC HOLIDAYS INCLUDED

LECTURE

week	Topic	Compulsory reading; page number (from ... to ...)	Required tasks (assignments, tests, etc.)	Completi on date, due date
1.	Introduction	[2.] 1		
2.	The SQL language and relational databases, database managers: Oracle database versions, the structure of Oracle. SQL syntax basics: SELECT statement, WHERE condition, operators, ORDER BY ordering, GROUP BY grouping, aggregation functions, HAVING condition, DISTINCT uniqueness, CASE expression, ROWNUM numbering, UNION and UNION ALL MINUS, Embedded queries, Connecting tables, INNER JOIN, OUTER JOIN, Dual table.	[2.] 2		
3.	Oracle objects, object types. Tables, views, indexes, partitioning, constraints. PL/SQL program structures: Program structures, blocks, variables, SELECT INTO structure, IF structure, CASE structure, FOR loop, WHILE loop, global variables.	[2.] 3		
4.	Oracle, PL/SQL types: Types, SUBTYPE, scopes for creating types, CREATE TYPE (constructor, methods, inheritance).	[2.] 4		
5.	Transaction	[2.] 5		
6.	Creating and working with procedures. Calling a procedure.	[2.] 6		
7.	Creating and working with functions. Call a function.	[2.] 7		
8.	Special views: Special views and tables (all_tab..., user_tab..., all_source...) concept of views, usage, creation, modification through views, concept of temporary table, types of tables, Creating temporary tables, external tables, creating external tables.	[2.] 8		
9.	Repeating, learning of the curriculum through online videos	[2.] 9		
10.	Consultation before Test	[2.] 10		
11.	Triggers, sequences: Concept of sequences, triggers, trigger types by event (INSERT, UPDATE, DELETE, DDL), trigger types by timing (BEFORE, INSERT, INSTEAD OF) FOR EACH ROW and STATEMENT trigger, :NEW and :OLD variables.	[2.] 11		
12.	Dynamic SQL: The need for dynamic SQL statements, EXECUTE IMMEDIATE.	[2.] 12		
13.	Presentation of the project work (database)			

PRACTICE, LABORATORY PRACTICE

<i>week</i>	Topic	Compulsory reading; page number (from ... to ...)	Required tasks (assignments, tests, etc.)	Completi on date, due date
1.	Introduction	[2.] 1		
2.	Getting to know PL/SQL Developer/IntelliJ IDEA. Table, create, alter. Field, basic field types. Relation. Set theory, NULL value	[2.] 2		
3.	PL/SQL Developer: Creating instructions, creating a scheme, assigning rights. Data modification instructions, authorization management: Basics of transaction management, inserting data, modifying data, deleting data, table spaces, size limits, users, schemas, assigning authorizations (GRANT, REVOKE) DML and DDL instructions, object management (CREATE, ALTER, DROP).	[2.] 3		
4.	PL/SQL Developer: Creating selects.	[2.] 4		
5.	PL/SQL Developer: Creation of Tables, Views, Indexes, Constraints (FK, UK, CK...).	[2.] 5		
6.	PL/SQL Developer: Using procedures.	[2.] 6		
7.	PL/SQL Developer: Creating functions.	[2.] 7		
8.	PL/SQL Developer: Practising procedures and functions.	[2.] 8		
9.	Holiday (1st Nov)			
10.	Test			
11.	PL/SQL Developer: Using triggers.	[2.] 11		
12.	PL/SQL Developer: Dynamic SQL. The need for dynamic SQL statements, EXECUTE IMMEDIATE. Using special views, creating views, external tables. Creating dynamic SQLs.	[2.] 12		
13.	Re-take test. Presentation of the project work (database).		Project work	8th Dec 23:59

3. ASSESSMENT AND EVALUATION

(Neptun: Instruction/Subjects/Subject Details/Syllabus/Examination and Evaluation System)

ATTENDANCE

In accordance with the Code of Studies and Examinations of the University of Pécs, Article 45 (2) and Annex 9. (Article 3) a student may be refused a grade or qualification in the given full-time course if the number of class absences exceeds **30% of the contact hours** stipulated in the course description.

Method for monitoring attendance (e.g.: attendance sheet / online test/ register, etc.)

Attendance at 70% of classes is mandatory. The participation rate does not affect the grade, but an absence of more than 30% results in the subject being refused.

Attendance is checked on the basis of an attendance sheet.

ASSESSMENT

Course-unit with final examination

Mid-term assessments, performance evaluation and their weighting as a pre-requisite for taking the final exam

Type	Assessment	Weighting as a proportion of the pre-requisite for taking the exam
Test		50 %
Project work (database)		50 %

Requirements for the end-of-semester signature

The condition for signing is to obtain a minimum grade of 2 on the test and the number of class absences not exceed the 30% of the contact hours.

Re-takes for the end-of-semester signature (PTE TVSz 50§(2))

The specific regulations for grade betterment and re-take must be read and applied according to the general Code of Studies and Examinations. E.g.: all the tests and the records to be submitted can be repeated/improved each at least once every semester, and the tests and home assignments can be repeated/improved at least once in the first two weeks of the examination period.

The test will be retaken and corrected in week 13.

Type of examination (written, oral): oral

The exam is successful if the result is minimum 40 %.

Calculation of the grade (TVSz 47§ (3))

The mid-term performance accounts for 50 %, the performance at the exam accounts for 50 % in the calculation of the final grade.

Course grade	Performance in %
excellent (5)	85 % ...
good (4)	70 % ... 85 %
satisfactory (3)	55 % ... 70 %
pass (2)	40 % ... 55 %
fail (1)	below 40 %

4. SPECIFIED LITERATURE

In order of relevance. (In Neptun ES: Instruction/Subject/Subject details/Syllabus/Literature)

COMPULSORY READING AND AVAILABILITY

- [1.] Database PL/SQL Language Reference: <https://docs.oracle.com/database/121/LNPLS/toc.htm>
- [2.] Subject Materials in Teams
 - 1. Lecture_Practice - 1
 - 2. Lecture_Practice - 2
 - 3. Lecture_Practice - 3
 - 4. Lecture_Practice - 4
 - 5. Lecture_Practice - 5
 - 6. Lecture_Practice - 6
 - 7. Lecture_Practice - 7
 - 8. Lecture_Practice - 8
 - 9. Lecture_Practice - 9
 - 10. Lecture_Practice - 10
 - 11. Lecture_Practice - 11
 - 12. Lecture_Practice - 12

RECOMMENDED LITERATURE AND AVAILABILITY

- [3.] Rod Stephens: Beginning Database Design Solutions
<https://www.amazon.com/Beginning-Database-Design-Solutions-Stephens-ebook/dp/B005USEC3S>
- [4.] Head First SQL: Your Brain on SQL -- A Learner's Guide
<https://www.amazon.com/Head-First-SQL-Brain-Learners/dp/0596526849>