

Database Systems

Syllabus Number

4C306

Special Subjects

Elective 2 credit

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1. Course Description

In this course, you will learn about database, a mechanism which enables to effectively store and retrieve data. Specifically, you will learn the following.

- * Basic Concepts of Databases
- * Models of Database
- * Query language for Database
- * Design of Relational Database and Operation of data

You will acquire knowledge and skills on DP2 and DP3 of diploma policies.

2. Course Objectives

The goal is to understand the basic concepts of databases required for complex information processing and the basic mechanism of database systems so that you can apply them. You will be required to acquire the following skills when completing the course.

- * You can explain concepts about relational models (relation, keys, functional dependencies, relational algebra).
- * You can perform simple retrieval and output by using SQL, a relational database language.
- * You can explain concepts of an entity-relationship model and methods to design a relational database with it.
- * You can explain the background of normalization and the features of the third normal form.

3. Grading Policy

Your grade will be assessed based on the scores of final exams (60%), small test and exercise problems (40%).

However, if you do not meet the following two conditions, you will be failed regardless of your grade.

- (1) You must pass all tasks (small tests in every class).
- (2) You must get score in the final exams at least 60%.

You will receive elucidations and evaluations in the LMS.

4. Textbook and Reference

Textbook

吉川 正俊 IT Text データベースの基礎 オーム社、ISBN-13: 978-4274223730

Reference

速水 治夫、宮崎 収兄、山崎 晴明 IT Text データベース オーム社、ISBN-13: 978-4274132544

You also use materials provided on the LMS.

5. Requirements(Assignments)

For the preparation, you should read through the teaching materials. (1.5 hours)

After the class, you should review and work on the assignment in order to improve your understanding. (1.5 hours)

6. Note

The lesson materials and scope of each class will be notified on LMS.

Textbook is written in Japanese, so you need to understand the text book or find another textbook by yourself.

7. Schedule

- [1] Basic Concepts of Databases
- [2] Relational Databases (1): Relation, Basic terms and Concepts
- [3] Relational Databases (2): Relationship Schema and Relational Database
- [4] Relational algebra (1): Relational Algebraic Operation
- [5] Relational algebra (2): Relational Algebraic Expression
- [6] SQL(1): Basic terms and concepts
- [7] SQL(2): Queries
- [8] SQL(3): Update Operation
- [9] Design of Conceptual Schema(1): Data dependency
- [10] Design of Conceptual Schema(2): Normalization
- [11] Design of Conceptual Schema(3): ER models
- [12] Database for Decision Support
- [13] Data Storing, Query processing
- [14] Transaction(1): Concepts of Transactions, Concurrency Control
- [15] Transaction(2): Fault recovery