COURSE OVERVIEW

SEMANTIC DATA MODELING

by

Dr.ir. J.H. ter Bekke

Overview of the discipline

Fundamentals of data modeling

Data modeling

Case studies

References:

- J.H. ter Bekke, **Semantic Data Modeling**, Prentice Hall, Hemel Hempstead (1992), ISBN 0 - 13 - 806050 - 9.
- J.H. ter Bekke, **Database Ontwerp (derde druk)**, Kluwer Bedrijfswetenschappen, Deventer (1993), ISBN 90 - 267 -1864 - 0.

Recently in:

- F.D. Rolland, **The Essence of Databases**, Prentice Hall, Hemel Hempstead (1998), ISBN 0 - 13 - 728275 - 6.

SUMMARY

COURSE: **SEMANTIC DATA MODELING**
LECTURER: **Dr.ir. J.H. ter Bekke**

CONTENTS:

The course introduces fundamental concepts and general principles of data modeling. Practical cases illustrate the theory where appropriate. Recent developments in the database area are included. The course is organized in four main parts:

- *Overview of the discipline*, including an assessment of the relational theory. An overview of seven modern data modeling approaches is also presented in this part.

- *Fundamentals of data modeling*, introducing semantic concepts leading to proper object modeling.

- *Data modeling*, illustrated with numerous practical examples. Conversion into suitable traditional models (including relational), by applying just a few simple rules, makes the collection of data and query structures reliable and easier to understand.

- *Case studies*. Semantic data modeling is illustrated with several cases. They illustrate data modeling in complex situations and the problem of formulating queries in practical environments.

Relational systems have become widely accepted the last few years. However, many pitfalls have also been discovered in the relational theory. The course presents an in-depth analysis of the problems and offers a deeper understanding. By putting emphasis on the semantic structure of a database, reliable solutions are created for both data modeling and data manipulation problems. The theory is based on both theoretical and practical research. It is illustrated with many examples and exercises.

CONTENTS
sheets

RECENT CONFERENCE PAPERS

full papers can be found via: http://is.twi.tudelft.nl/dbs/terBekke.html

- J.H. ter Bekke, **Complex values in databases**, Proceedings International Conference on Data and Knowledge Systems for Manufacturing and Engineering, Hong Kong (1994), 449-455.

- J.H. ter Bekke, **Meta modeling for end user computing**, Proceedings Workshop on Data and Expert Systems Applications DEXA 1995, London (1995), 267-273.

- J.H. ter Bekke, **Semantic modeling of successive events applied to version management**, Proceedings International Symposium on Cooperative Database Systems for Advanced Applications (CODAS '96), Kyoto (1996), 32-39.

- J.H. ter Bekke, **Comparative study of four data modeling approaches**, Proceedings 2nd international EMMSAD workshop, Barcelona (1997), B1-B12.

- J.H ter Bekke, **Can we rely on SQL?**, Proceedings 8th international DEXA workshop, Toulouse (1997), 378-383.

- J.H. ter Bekke, **Advantages of a compact semantic meta model**, Proceedings 2nd IEEE Metadata Conference, Silver Spring (1997), http://www.computer.org/conferen/proceed/meta97/papers/jterbekke/jterbekke.html.

- J.H. ter Bekke, **Semantic requirements for databases in casual environments**, Proceedings SAICSIT'99, Johannesburg (1999).