



<b>The Faculty of:</b>	Electrical and Computer Engineering
<b>Field of study:</b>	Electrical Engineering
<b>Speciality:</b>	EA
<b>Study degree (BSc, MSc):</b>	<b>BSc</b>

### COURSE UNIT DESCRIPTION

<b>Course title:</b>	Data base systems and applications
<b>Lecturer responsible for course:</b> Grzegorz Dec, PhD	
<b>Contacts: phone:</b> +48 17 8651486	<b>e-mail:</b> gdec@prz-rzeszow.pl
<b>Department :</b> Computer Science and Automatic Control	

Semester	Weekly load	Type of classes				Number of ECTS credits
		L Lectures	C Theoretical Classes	Lb Laboratory	P Project	
6	3	30			15	4

Course description
<p><b>Lecture:</b></p> <ol style="list-style-type: none"> <li>1. Technics and methods of the design of database information systems.</li> <li>2. Data modeling: Entity Relationship Diagram</li> <li>3. ERD: generic templates. Quality of an ERD.</li> <li>4. Database Diagram. Transforming ERD → Database Diagram.</li> <li>5. Process modeling: Function Hierarchy (FH) and CRUD matrix diagram.</li> <li>6. Data Flow Diagram. Quality of process models.</li> <li>7. Process Diagram.</li> <li>8. Integrity of data and process models.</li> <li>9. Transforming Database Diagram → relational tables.</li> <li>10. Rules of an application design.</li> <li>11. The SQL language – data types, objects in the relational database.</li> <li>12. Transforming Database Diagram → relational tables definitions expressed in the SQL.</li> <li>13. SQL queries. Implementation of complex ERD models.</li> <li>14. FH and the CRUD matrix as a model of stored functions.</li> <li>15. GUI in the WWW browser. A database in the Internet.</li> </ol>
<p><b>Classes:</b></p>
<p><b>Laboratory:</b></p>

**Project:**

1. Design of models of an information system.
2. Transforming models to the logical layer.
3. Implementation of the data model in the SQL language,
4. Implementation of the process model in the SQL language,
5. A prototype of the GUI.

**Objectives of the course**

Design of database systems (DBS) according to structural methods. Applying tools supporting the design of DBS. Specification of the DBS. Queries in the SQL language. Transformation of the ERD into the SQL. Transformation of the process models into the GUI forms and stored functions.

**Examination method**

Project: design and implementation of a DBS.  
Lecture: a written exam

**Bibliography**

1. Barker R.: CASE Method. Modelowanie związków encji, WNT, Warszawa 2005.
2. Barker R., Longman C.: CASE Method. Modelowanie funkcji i procesów, WNT, Warszawa 1996.
3. Świder K., Dec G., Trybus B.: Inżynieria systemów informatycznych. Podstawy i praktyka budowy systemów oprogramowania, Oficyna Wydawn. PRz, Rzeszów 2004.
4. Yourdon E.: Współczesna analiza strukturalna, WNT, Warszawa 1996.
5. Heikki M., Kari-Jouko R. "The design of relational databases" Wokingham, England: Addison-Wesley Publ.Comp., 1992
6. Praca zbiorowa, (Wellesley Software): "SQL - Język relacyjnych baz danych", WNT, Warszawa 1995.
7. Ullman Jeffrey D.: "Systemy baz danych", WNT, Warszawa 1988.

<b>Lecturer signature</b>	
<b>Head of Department signature</b>	
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