

SUBJECT PROGRAM

I. IDENTIFICATION OF THE SUBJECT

Subject: Databases		Acronym: INF-239	Approval date 08/11/2015 (Agreement 13/2015)		
UTFSM Credits : 3	Prerequisites: INF-134 or ILI-134	Exam: Does not have	Faculty.		
SCT Credits : 5			Computer Science Department		
Weekly Lecture Hours : 2.5	Weekly Assistantship Hours: 0.5	Weekly Laboratory Hours: 1.1	Semester in which it is taught		
			Odd X	Pair	Both
Formative axis : Applied Engineering Sciences: Software Development Line					
Total time dedicated to the subject : 145 chronological hours					

Subject Description

The student designs and builds databases, using specialized software existing in the industry and develops relevant applications to solve real information management problems. The subject includes concepts and properties of databases and their modeling, as well as methodologies to design and build relational databases in different organizations. The knowledge acquired and the skills developed will allow the student to perform in their professional future as an architect and data administrator.

Entry requirements

- Understands data structures in main memory and *ad hoc algorithms*.
- It includes data structures in secondary memory (files) and *ad hoc algorithms*.
- Program in some programming language.
- Values the importance of information in organizational decision making.

Contribution to the graduation profile

- Conceive, model, design, evaluate and implement alternative computer technology solutions, based on the analysis of specific problems in any business area.

Specific Competition.

- Develop, implement, and maintain reliable, efficient and feasible software systems.

Elements of the competition.

- Model, design and build databases applying their concepts and properties.

Transversal Competencies.

- Interact in the environment by establishing communication networks in Spanish and English.
- Communicate oral and written information effectively, both within the organizations in which one works and with entities in the environment.
- Act with autonomy, flexibility, initiative, and critical thinking when facing professional problems.
- Develop their work with solid criteria that allow you to ensure quality from a systemic perspective.
- Manifest behaviors and attitudes of social responsibility and tolerance, valuing ethical principles.

Learning outcomes expected to be achieved in this subject

- **Analyzes** the role of databases (DB) and database management systems (SABD) in organizations, **applying** efficiency criteria for their use.
- **Analyzes** the role of data models (DM) and databases in the analysis and design of information systems (IS), **recognizing** their contribution to organizational processes.
- **Design** data models for different realities or systems, **using** standard representation notations (such as UML, Bachman, E-R, E-R-E, among others).
- **Develops** databases, **using** relational database management systems (SABDR).

Thematic contents

- Concepts and properties of databases.
- Conceptual data models.
- Logical design of relational databases.
- Physical design of relational database.
- Relational database management systems.
- Database query languages (Relational Algebra and SQL).
- Processing of queries and transactions.
- Complementary topics: trends in databases and legal aspects of data privacy.

Teaching and learning methodology

- Expository classes supported by audiovisual media and teacher notes.
- Resolution of exercises and problems in classes.
- Practical activities (or tasks) in a computer laboratory to use relational database management systems, both with commercial and free distribution licenses, for the development of Web or other applications according to advances in the area.
- Practical case to work as a team around the design of a relational database, using a CASE tool and discussion forum to select the most optimal design.
- Short readings of texts in English on trends in databases and data privacy.

Evaluation and grading of the subject (Adjusted to Institutional Regulations-Regulation No. 1)

Approval requirements and qualification	<div> <div>The evaluation and qualification process consists of:</div> <div> It is evaluated through 3 Quizzes, 2 Laboratory Tasks, a Case and 2 Reading Controls. <table border="1"> <thead> <tr> <th>Evaluation instrument</th><th>%</th></tr> </thead> <tbody> <tr> <td>Average Exams (PC)</td><td>60</td></tr> <tr> <td>Average Tasks (PT)</td><td>25</td></tr> <tr> <td>Case (C)</td><td>10</td></tr> <tr> <td>Average Readings (PL)</td><td>5</td></tr> </tbody> </table> <ul style="list-style-type: none"> • If PT, C or PL < 55, they fail the subject. • If PC is >= 50, PT >= 55 and PL >= 55, the Semester Average (PS) is calculated according to: <div> <div>PS = PC*0.60 + PT*0.25 + C*0.10 + PL*0.05</div> </div> • For students with CP between 40 and 49, there will be a Recovery Contest at the end of the semester, including all the subject, whose grade replaces the lowest exam grade. If the remedial grade is lower, the best grade is left. </div> </div>	Evaluation instrument	%	Average Exams (PC)	60	Average Tasks (PT)	25	Case (C)	10	Average Readings (PL)	5
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Average Readings (PL)	5										

Learning resources Bibliography:

Guide Text	<ul style="list-style-type: none"> Hoffer J., Ramesh V., Topi H. (2012). Modern Database Management International. Pearson Education. 11th Edition.
Complementary or Optional	<ul style="list-style-type: none"> Elmasri R. and Navathe S. (2010). Fundamentals of Database Systems. Pearson Addison-Wesley. 6th Edition. García-Molina H., Ullman J., Widom J. (2009). Database Systems: The complete book. Prentice Hall. 2nd Edition. Virtual platform.

II. CALCULATION OF NUMBER OF HOURS OF DEDICATION - (SCT-Chile) - SUBJECT SUMMARY TABLE

ACTIVITY	Number of hours of dedication		
	Number of hours per week	Number of weeks	Total number of hours
PRESENCE			
Lecture or theoretical classes	3	14	42
Assistantship/Exercises	1.5	6	9
Industrial visits (Field)			
Laboratories / Workshop	1.5	12	18
Evaluations (Exams)	3	3	9
Others (Case)	3	3	9
NO PRESENCE			
Assistantship			
Mandatory tasks	2	12	24
Others (Individual or group)	2	17	34
TOTAL (HOURS)			145
Total number of TRANSFERABLE CREDITS			5