ISTANBUL MEDIPOL UNIVERSITY

SYLLABUS

IMU-COE3149650 DATABASES

2018 Fall Semester

Course Code	Course Name	Course Type	Weekly T	Weekly A	Weekly L	Credits	ECTS	Weekly Class Schedule
COE3149650	Databases	Required	3	0	2	4	8	M : 9:00-12:00 C-242 North Campus
Prerequisite		Prerequisite to						

Lecturer	Selim Akyokuş	Office Hours Schedule	Monday 14:30
E-mail	sakyokus@medipol.edu.tr		
Phone	x 1234	Office / Room No	C - 320 - North Campus
Assistants	Asmaa Samy Mohamed Mahmoud		
E-mail	amahmoud@medipol.edu.tr		

Course Objectives

The objective of this course is to study of fundamental concepts behind the design, implementation and application of database systems. The course covers different database models and an in-depth coverage of the relational model including relational algebra and calculi, query languages, normalization theory, integrity and security, storage structures, access methods, query processing, transaction, concurrency and recovery control, advanced querying, information retrieval systems, distributed databases, NoSQL systems and big data. Students will be familiar with several well-known database and storage systems and pratice on some of them.

Textbook

Required Textbooks:
- R. Elmasri, S. B. Navathe ,Fundamentals of Database Systems, 7th edition, Addison- Wesley, 2016.

Additional Textbooks and References:
- A. Silberschatz; H. Korth; S. Sudarshan, Database System Concepts, 6th Edition, McGraw-Hill, 2012.
- H. Garcia-Molina, J. Ullman, and J. Widom, Database Systems: The Complete Book, 2nd Edition, Pearson Prentice Hall, 2009.
- Ramakrishnan, Raghu, and Johannes Gehrke. Database Management Systems. 3rd ed. McGraw-Hill, 2002.

Learning Outcomes

After successful completion of the course, the student will be able to:

1	Have a solid background on database management systems, concepts and architectures
2	Learn relational model, relational algebra, relational calculus and database constraints
3	Learn basic and complex SQL queries, trigers, views and schema modifications.
4	Design databases using relational database methods and apply this knowledge and database programming to the real life applications.
5	Understand object, object-relational, and XML concepts, models, languages, and standards
6	Understand file structures, indexing, query processing, optimization, concurrency control and recovery used in database systems
7	Learn NoSQL Databases and Big Data Storage Systems

Teaching Methods

Class discussions with examples. The notes and the presentations will be delivered during the lectures.

WEEK	TOPIC	REFERENCE
Week 1	Introduction to Databases,Database System Concepts and Architecttures	Slides and Elmasri Chap. 1 & 2
Week 2	Conceptual Data Modeling, Database Design and ER Model	Slides and Elmasri Chap. 3 & 4
Week 3	The Relational Data Model and Relational Database Constraints	Slides and Elmasri Chap. 5
Week 4	Basic SQL	Slides and Elmasri Chap. 6
Week 5	More SQL: Complex Queries, Triggers, Views, and Schema Modifications	Slides and Elmasri Chap. 7
Week 6	The Relational Algebra and Relational Calculus	Slides and Elmasri Chap. 8
Week 7	Relational Database Design by ER and EER, EER-to-Relational Mapping	Slides and Elmasri Chap. 9
Week 8	Database Programming Techniques	Slides and Elmasri Chap. 10 & 11
Week 9	Exam Week	All slides and chapters till Week 9
Week 10	Object, Object-Relational, and XML: Concepts, Models, Languages, and Standards	Slides and Elmasri Chap. 12 & 13
Week 11	Database Design Theory and Normalization	Slides and Elmasri Chap. 14 & 15
Week 12	File Structures, Hashing, Indexing, and Physical Database Design	Slides and Elmasri Chap. 16 & 17
Week 13	Query Processing, Optimization, Concurrency Control, and Recovery	Slides and Elmasri Chap. 18-22
Week 14	NoSQL Databases and Big Data Storage Systems	Slides and Elmasri Chap. 24 & 25

Assessment Methods and Criteria

Evaluation Tool	Quantity	Weight
Final Exam	1	40%
Midterm	1	25%
Quizes	2	20%
Project	1	10%
Labs & HW Assignments	5	10%
Attendance	14	5%

*** ECTS Credit Calculation ***

Language of Instruction: English

Activity	Hours	Weeks	Student Workload Hours	Activity	Hours	Weeks	Student Workload Hours
Lecture hours	3	14	42,0	In-term exam study	25	2	50,0
Labs	3	8	24,0	Final exam study	24	1	24,0
HWs	3	5	15,0	Term project/presentation	16	3	48,0
						Total Workload Hours =	203,0
						Recommended ECTS Credit =	8