JSC «Kazakh-British Technical University»
Faculty of Information Technology
Chair of Information Systems Management

SYLLABUS

Discipline: CSE1301 Databases
Number of credits: 3 (2/0/1)
Term: Fall 2018
Instuctor's full name: Kuralbayev **Aibek** Talgatuly

Personal Information about the Instructor	Time and place of classes		Contact information	
	Lessons	**Office Hours**	**Tel.:**	**e-mail**
Kuralbayev Aibek Talgatuly Senior Lector	According to the schedule	According to the schedule	8701222258 27	aibekkuralbayev@gmail.com

Course duration: 3 credits, 15 weeks (60 class hours)
Course pre-requisites: Programming languages

Course Objectives:

This course aims to basic principles of databases, design and development databases as part of an entire information system, proficiency in basic database development. This course includes SQL databases foundation, also Database Management Systems are covered. As a chosen DMBS – PostgreSQL Server will be highlighted. As additional part of this course, integration of databases with backend web-application will be implemented.

Course Goals:

After the completion of the course, students will learn how to do the following:

* Develop SQL databases as part of an entire information system.
* Query data utilizing T-SQL
* Design normalized database structures
* Create and deploy databases.
* Integrate databases with web-applications.

- Create stored procedures and triggers.

Literature:
  Required:
1. Beginning Microsoft SQL Server 2012 Programming, Paul Atkinson, Robert Vieira, Paperback**,** 864 pages, April 2012

  Supplementary:
1. https://docs.microsoft.com/ru-ru/sql/sql-server/tutorials-for-sql-server-2016
2. Alex Kriegel, Boris M. Trukhnov, SQL Bible, John Wiley & Sons, 2008, 857 pages

COURSE CALENDAR

Week	Topic	Class work				SIS (students independent study)		TSIS (teacher supervised independent study)	
		Lectures, hours	Lab, hours	Seminars, hours	Chapters for reading	Hours	Description	Hours	Description
1	**Lecture #1. Introduction to Databases** Overview of SQL databases, basic principles of data storages, types of data storages, DBMS, domain driven systems.	0	2	2	[4] Ch1,2 [1] 2.1-2.3 , 2.5-2.8 [2] Ch. 2	1	Lab #1, Problems [2] Ch. 2	4	
2	**Lecture #2.** Create Database, Drop, and Different parameters on Create SQL databases foundation, creation and configuration of database.	0	2	2	[4] Ch 3 [1] 3.2-3.5, 3.7	1	Lab #1 Problems [1] 3.2-3.5, 3.7	4	

3	**Lecture #3.** Create Table, Alter Table, Drop SQL database tables manipulation foundation, dropping and creating of tables, normalization.	0	2	2	[4] Ch 3 [2] Ch. 5	1	Problems [2] Ch. 5	4	
4	**Lecture #4.** DDL – Data definition Language Data Definition Language foundation, overview of DDL basic principles.	0	2	2	[4] Ch 4 [1] Ch. 9	1	Lab #2, SIS1, Problems [1] Ch. 9	4	TSIS 1
5	**Lecture #5.** DML – Data manipulation Language Data manipulation Language foundation, basic SQL operators overview, principles of data manipulation.	0	2	2	[4] Ch 4 [1] Ch. 10	1	Lab #3, Problems [1] Ch. 10	4	
6	**Lecture #6.** Conditional Select, using Where. Ordering output. Data table selection, data filtering, ordering of output data.	0	2	2	[4] Ch 4 [2] Ch. 6	1	Lab #3, Problems [2] Ch. 6	4	
7	**Lecture #7.** Join Types Data tables linking basic principles overview, joining of multiple table in query.	0	2	2	[4] Ch 5 [2] Ch. 6 (from page 318)	1	SIS2, Problems [2] Ch. 6	4	

8	**Lecture #8.** Stored procedures Introduction to stored procedures and triggers, stored procedures development.	0	2	2	[4] Ch5 [2] Ch. 6 (from page 318)	1	Lab#4, Problems [2] Ch. 6	4	TSIS2
9	**Lecture #9.** Configuring SQL Server Management Studio MS SQL Server DBMS overview, basic configuring of databases, roles, security.	0	2	2	[4] Ch 7 [1] Ch. 17, 19 [2] Ch. 14	1	Problems [2] Ch. 14	4	
10	**Lecture #10.** Query Optimization Query optimization fundamentals, stored procedures refactoring.	0	2	2	[4] Ch 8 [2] Ch. 8 [3] Ch. 10	1	SIS3, Lab #5, Problems [2] Ch. 8	4	Assignments of Student Project
11	**Lecture #11.** PostgreSQL & Oracle & SQLite comparing Main advantages and disadvantages of different SQL Databases overview.	0	2	2	[4] Ch 9 [1] Ch. 13 [2] Ch. 7	1	Problems [1] Ch. 13	4	
12	**Lecture #12.** PostgreSQL in web apps, integration Fundamentals of web-applications data storages, integrating SQL databases with web-application services.	0	2	2	[1] Ch. 23 [2] Ch. 16	1	Lab #6, Problems [1] Ch. 23	4	Checkpoint

13	**Lecture #13.** Transact SQL Beginning T-SQL fundamentals, features overview.	0	2	2	[1] Ch. 24	1	SIS #4, Problems [1] Ch. 24	4	
14	**Lecture #14.** Diving into Transact SQL Query development using T-SQL, stored procedure development.	0	2	2	[4] Ch 6 [1] Ch. 14	1	Lab 7, Problems [1] Ch. 14	4	Project Defense
15	**Lecture #15. NoSQL Database** NoSQL databases overview, introduction to different NoSQL Databases.	0	2	2	[4]Ch 10 All chapters	1		4	
	Final Exam						**In written form**		
	Total	**0**	**30**	**30**			**15**		**60**

COURSE ASSESSMENT PARAMETERS

Type of activity	Final scores
Laboratory works	14%
Quizzes	4%
SIS	20%
Project	10%
Midterm exam	12%
Final exam	40%
Total	**100%**

Criteria for evaluation of students during semester:

		Weeks																Total scores
Assessment criteria		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16-17	

№																		%
1.	Laboratory works	*	*	*	*	*		*		*						10%
2.	SIS		*		*		*			*						30%
3.	Project											*				10%
4.	Midterm exam					*										10%
5.	Final exam													*		40%
	Total															**100%**

Academic Policy

KBTU standard academic policy is used.
- Cheating, duplication, falsification of data, plagiarism, and crib are not permitted under any circumstances!
- Attendance is mandatory.

   Attention. Missing 20% attendance to lessons, student will be taken from discipline with filling in F (Fail) grade.

   Students must participate fully in every class. While attendance is crucial, merely being in class does not constitute "participation". Participation means reading the assigned materials, coming to class prepared to ask questions and engage in discussion.
- Students are expected to take an active role in learning.
- Written assignments (independent work) must be typewritten or written legibly and be handed in time specified. Late papers are not accepted!
- Students must arrive to class on time.
- Students are to take responsibility for making up any work missed.
- Make up tests in case of absence will not normally be allowed.
- Mobile phones must always be switched off in class.
- Students should always be appropriately dressed (in a formal/semi-formal style).
- Students should always show tolerance, consideration and mutual support towards other students.