JSC «Kazakh-British Technical University»
Faculty of Information Technology
Department of Electrical Engineering and Computer Science

APPROVED BY
Dean of FIT

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«____»_____ 20__.

SYLLABUS

Discipline: Programming Principles 1
Number of credits: 4
Term: Fall 20__
Instructors full name: Askar Akshabayev, Beisenbek Baisakov

Personal Information about the Instructor	Time and place of classes		Contact information
	Classes	Office Hours	e-mail
Askar Akshabayev	According to the schedule	Room 262, will be appointed	askar.akshabayev@gmail.com
Beisenbek Baisakov	According to the schedule	Room 272, will be appointed	beysenbek@gmail.com b.baisakov@kbtu.kz

COURSE DURATION: 4 credits, 15 weeks, 60 class hours

COURSE DESCRIPTION

This course is designed to introduce students to Procedure Oriented Programming concepts on the assumption that they are not familiar with programming. Its main aim is to teach the principle of programming using C++ rather than attempting to give complete exposition of all the features of C++.

COURSE OBJECTIVES

The objective of this course is to provide the student with the fundamental knowledge and skills to become a proficient C++ programmer.

COURSE OUTCOMES

Students will be exposed to basic hardware and software concepts and familiar with issues related to software design. They will master using key structured programming constructs: declarations, sequence, selection, repetition, evaluating expressions, be familiar with using C++ functions and the concepts related to good modular design. They will learn working with one-dimensional, two-dimensional arrays, C++ structures, pointers and reference parameters. Also they will be familiar with using text file input/output.

COURSE POST REQUISITES

Knowledge and skills obtained during study of course Programming Languages are used in following courses: Programming Technologies, Object-Oriented Programming, Algorithms and Data Structure.

LITERATURE

1. C++ How to Program, 8th Edition, H. M. Deitel, P. J. Deitel - Deitel & Associates, Inc., Prentice Hall.
2. C++ for Dummies 7th Edition, Stephen Randy Davis, Wiley Publishing, Inc.
3. Practical C++ Programming, Steve Oualline, O'Reilly & Associates, Inc.
4. C++: The Complete Reference fourth edition, Herbert Schildt, McGraw-Hill

Week	Lectures Topic	Laboratory works
1	**Intro and Data Types** ● Introduction to code structure ● Compiling and executing program ● Introduction to data types ● Representing Numbers: int, double, float ● Comments ● printf, cin, cout ● freopen ● Introduction to git, teams	*Laboratory work #1*
2	**Binary operations** ● Bit manipulation ● or, xor, and, shift left, shift right **Conditional statements** ● if else operator **Loop operators** ● Loop operators: for, while, do while	*Laboratory work #2*
3	**1D array** ● What is Arrays ● Types of Arrays ● Array declaration ● Accessing element of array ● Searching In Array ● Bubble Sort	*Laboratory work #3*
4	**Quiz 1**	
5	**2D array** ● Initializing 2d arrays ● Accessing 2d array elements ● Multidimensional arrays	*Laboratory work #4*
6	**String** ● String functions ○ size ○ len ○ substr ○ constructor for string// string s("123") ○ find ○ insert ○ erase ○ stringstream ○ getline ○ append ○ string::npos //size_t	*Laboratory work #5*

	○ copy //str.copy(buffer,n,0); //buffer[n] = '\0';	
7	**Functions** ● Function Definition ● Custom functions, built-in functions ● Returning a Value, void functions ● Techniques of Passing Arguments ● Arrays as parameters to function	*Laboratory work #6*
8	**Quiz 2**	
9	**Recursion** ● Recursion definition ● Recursion examples	*Laboratory work #7*
10	**STL 1** ● Vector ● Set ● Map ● Iterators	*Laboratory work #8*
11	**STL 2** ● Queue ● Stack ● Multimap, multiset ● Next_permutation, sort	*Laboratory work #9*
12	**Quiz 3**	
13	**Algorithm library** ● count_if ● rotate ● fill ● unique ● for_each ● generate ● next_permutation ● prev_permutation	*Laboratory work #10*
14	**Pointers** ● Operations on Pointers ● Passing Pointers to Functions ● Pointers and Memory Management **Pair and Structures** ● Pair	*Laboratory work #11*

	• Structure Definition • Syntax of structure • Structure variable declaration • Accessing members of a structure • Structures within structures • Passing structures to a function **Header file** • Headers, and their purpose • Writing your own header files	
15	**Quiz 4**	
16	**Final Exam**	

Laboratories: The preparation of the laboratories is provided in the form of solving typical problems according to the lecture topics.

Grading policy:
In percents

#	Name	Percent
1	Quiz	60%
2	Final Exam	40%

	Type of Assessment	Weeks															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total
1	Lab work																
2	Quiz				15				15				15			15	60
5	Final Exam																40
	Grand Total																100

Academic Policy:
KBTU standard academic policy is used.
- Cheating, dцччplication, 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.

Minutes # __ of the Department of Electrical Engineering and Computer Science on , «__»_____,20__.