



**JSC «Kazakh-British Technical University»
School of IT and Engineering**

**APPROVED BY
Dean of SITE
Azamat Imanbayev**

«____» _____ **2024**

SYLLABUS

Discipline: Object-Oriented Programming and Design

Number of credits: 3

Course code – CSCI 2106

Term: Spring 2024

Instructors full name: Kaster Nurmukan

Personal Information about the Instructor	Time and place of classes		Contact information	
	Lessons	Office Hours	Tel	e-mail
Kaster Nurmukan	According to schedule	According to schedule	MS teams Join Code : z4blnsw	k.nurmukan@kbtu.kz

MS TEAMS LINK

https://teams.microsoft.com/l/team/19%3aa_0-zLh-XdFwB6-sWwbed2G2QO4Xhe-d7j37a66UbnA1%40thread.tacv2/conversations?groupId=68dfa397-a3e4-4740-82b9-b2af4f5c9952&tenantId=57081b5e-e66a-4993-8eaf-15b0b309293f

COURSE DURATION: 3 credits, 15 weeks, 45 class hours

GENERAL COURSE AIMS:

- (1) To obtain the knowledge of fundamental and advanced principles of Object- Oriented programming
- (2) To be able to use a high-level object-oriented programming language as a problem-solving tool

COURSE DESCRIPTION

Object technology is the driving force in the programming industry. It is now embedded in such diverse areas as requirements engineering, software architecture, analysis, design, programming, testing, deployment and maintenance. The fundamental concepts of object-oriented programming will be studied using the Java programming language. You will discover how to create flexible and reusable software, by applying object-oriented design principles and guidelines. And, you will be able to communicate these designs in a visual notation known as Unified Modelling Language (UML). OOP is crucial to all modern software development—including Applications development, Web development, and Mobile Applications Development. Moreover, OOP defines most modern server-side scripting languages

COURSE OBJECTIVES

The main objective of the course is to develop an understanding of the principles underpinning object oriented programming and apply object-based approaches using Java programming language.

COURSE OUTCOMES

Students will be exposed to basic and advanced oop concepts (Encapsulation, Inheritance, Polymorphism, Abstraction, Interfaces, Design Patterns, UML etc.). These allow the following outcomes which are critical success factors for any project in the IT industry: Ease of software design, Productivity, Easy testing, Debugging, and Maintenance, Code reuse, Less development time, and more accurate coding.

COURSE POST REQUISITES

Knowledge and skills obtained during the study of this course are used in the following courses: Web development, Mobile Applications Development, Software Engineering and App system Architecture Design

LITERATURE

1. The Cucumber Book, Second Edition, Behaviour-Driven Development for Testers and Developer by Matt Wynne and Aslak Hellesøy, with Steve Tooke, 2017
2. Big Java / C. Horstmann. - 3rd ed. - USA : John Wiley & Sons, 2008
3. Data structures & algorithms in C++ / M.T. Goodrich, R. Tamassia. - Second edition. - USA : John-Wiley, 2011
4. Oracle Academy Resource : Java SE programming Student Guide
5. Oracle Academy Resource : Java SE programming Activity Guide
6. The Java Technology Tutorial in Oracle, <http://docs.oracle.com>
7. An Introduction to Object-Oriented Programming with Java, C. Thomas Wu
<https://books-library.net/files/download-pdf-ebooks.org-1494095049Ne2H5.pdf>

COURSE ASSESSMENT CRITERIA

Assessment occurs continuously throughout the course. The evaluation will be based on the levels of (maximums in %):

COURSE ASSESSMENT PARAMETERS*

Type of activity	Final scores
Laboratory works (1-5)	20%
Laboratory works (6-10)	20%
End Term exams/Quizzes	10%
SIS/Project	10%
Final exam	40%
Total	100%

*Can be changed with prior announcement
TASKS for students independent study (SIS)

	Week	content of activity	scores
1	5	Create an Calculator with Java	2.5
2	7	IWS3, IWS 2: Create a Login Systems	2.5
3	11	IWS4, IWS 2: Java Project UI+ MySQL Database 1	2.5
4	13	IWS5, IWS 3: Java Project UI+ MySQL Database 2	2.5
		Total	10

COURSE CALENDAR

Week	Class work					SIS (students independent study)		TSIS (teacher supervised independent study)	
	Topic	Seminar	Lectures	Practice	Chapter reading	hours	Description	hours	Description
1	Introduction Java features. JVM. JRE. Java syntax. Java API. Variables. Programming fundamentals. Intro to OOP.	1	2	0	[1],[2] [4]Ch[1]	1	Lab#1	3	
2	Objects and Classes fields and methods. Primitive vs Reference types. Java library classes	1	2	0	[1],[2], [4]Ch[2]	1	Lab#1	3	
3	Lecture: Generics_Collection s Analyzing	1	2	0	Ch[4][7]	1	Lab#2	3	
4	Lecture: String_Processing Analyzing	1	2	0	Ch[4][8]	1	Lab#3	3	

5	Objects and Classes Data Class vs objects. UML. Constructors. References	1	2	0	[1],[2], [4]Ch[2]	1	Lab#4-1	3	TSIS #1/Project proposal
6	Lecture: Encapsulation	1	2	0	Ch[4][3]	1	Lab#4-2	3	
7	Lecture: Class_Design Analyzing	1	2	0	Ch[4][4]	1	Lab#5	3	TSIS#2/Project
8	Mid-term								
9	Lecture: Advanced Class_Design & Design Patterns(Singleton Pattern)	1	2	0	Ch[4][5]	1	Lab#6	3	
10	Lecture : Interfaces Analyzing -The DAO design pattern -The Factory design pattern	1		0	Ch[4][6]	1	Lab#7	3	TSIS#3
11	Lecture: Threading Application Analyzing	1	2	0	Ch[4][12]	1	Lab#8	3	
12	Lecture: JDBC with Database Architecture Analyze	1	2	0	Ch[4][13]	1	Lab#9	3	TSIS#4
13	Lecture: Concurrency	1	2	0	Ch[4][14]	1	Lab#10	3	
14	Conclusion	1	2	0		1	Quiz	3	Conclusion Defense
15	End-term					Exam format: Computer Based Test			
	Total	15	30			15		45	

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 30% attendance to lessons, students 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.
- Each lab has 7 days of deadline (start from lecture day), students have to defend your work face to face at lab time with lab instructor get grade,
- If any reason (including illness) out of deadline students certain lab, students have been allowed extend another 7 days to defend students work get max 80%(100=80), same time you have to send video format (upload youtube) send URL to lab instructor.